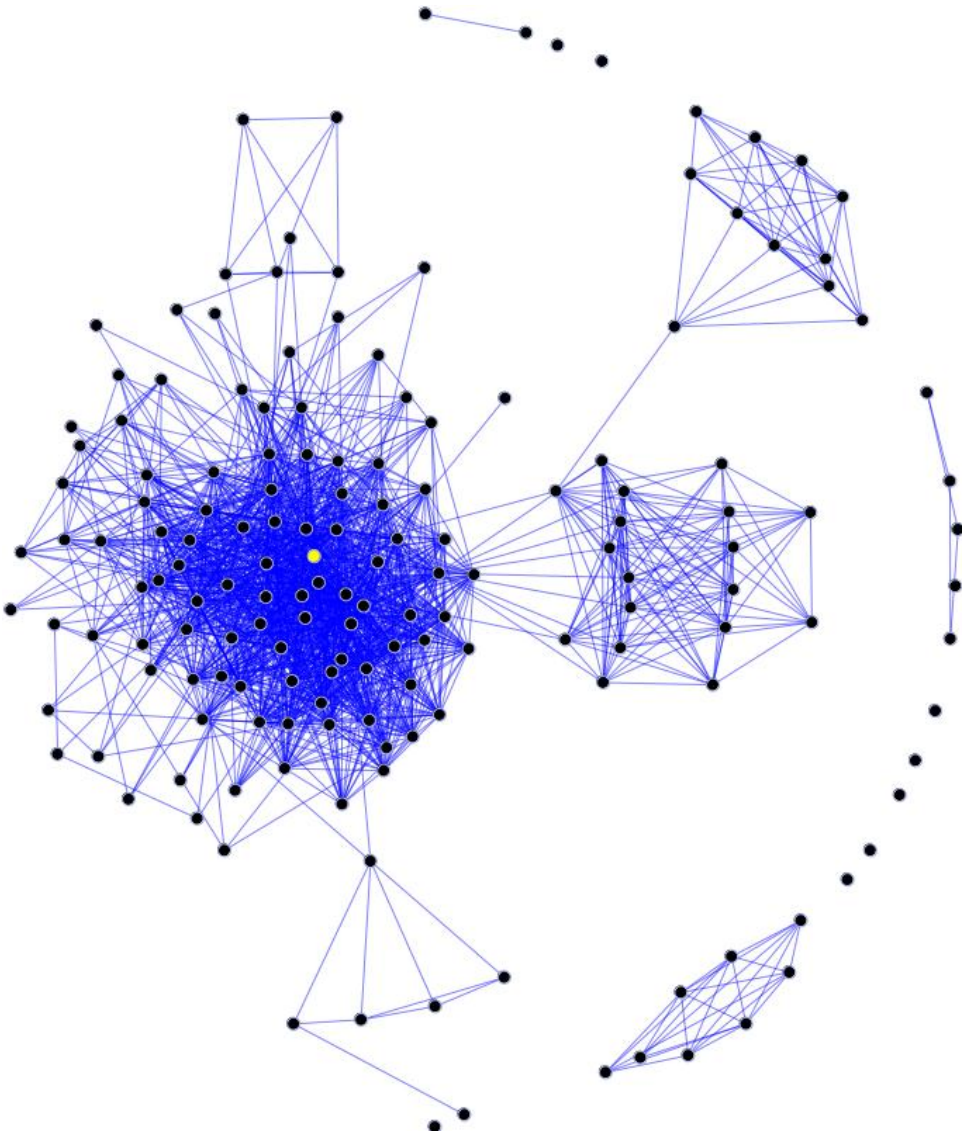
2010 International Conference on Advances in Social Network Analysis and Mining (ASONAM 2010)

Conference Program



2010 International Conference on Advances in Social Network Analysis and Mining

9-11 August 2010 / Odense, Denmark

Jointly with

- The International Symposium on Open Source Intelligence and Web Mining 2010 (OSINT-WM 2010)
- The 2nd International Workshop on Mining Social Networks for Decision Support (MSNDS2010)

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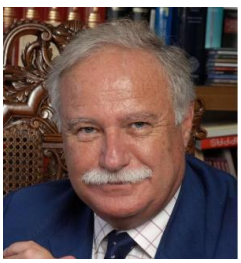

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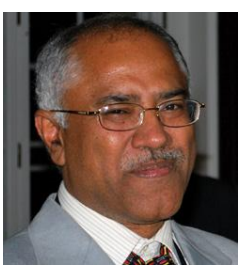

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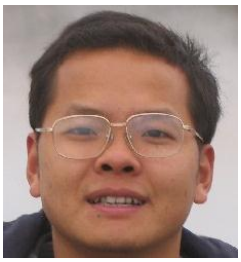

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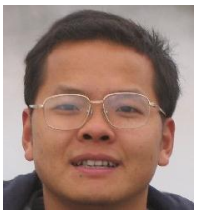

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A message from the General Chair

Welcome to ASONAM 2010 – the 2010 international conference on advances in social networks analysis and mining. ASONAM 2010 builds on the great success of ASONAM 2009 which was held in Athens, Greece in July 2009. The conference provides an excellent opportunity to meet fellow researchers and practitioners from a variety of social network analysis and mining fields to form new collaborations and to exchange research ideas and practices

It is my great pleasure that Stanley Wasserman from Indiana University accepted to be keynote speaker at the conference. Stan is well known for his work on statistical models for social networks and for his book, co-authored with Katherine Faust, Social Network Analysis: Methods and Applications. In addition to Stan, ASONAM 2010 will have four other prominent keynote speakers that are shared with the two workshops: the 2nd International Workshop on Mining Social Networks for Decision Support (MSNDS2010) and the International Symposium on Open Source Intelligence and Web Mining 2010 (OSINT-WM 2010). These four keynote speakers are: Johnny Engell-Hansen (Head of Operations Unit Council of the European Union), Andrew Chester (TradeBytes), Chris Pallaris (i-intelligence), and Jakub Piskorski (Joint Research Center, European Commission). I also wish to thank them for accepting our invitation. I am very happy that we can present such a strong group of keynote speakers at ASONAM 2010.

This year we will present an award for the best paper at the conference based on the reviews and the presentations. I wish to thank Springer for sponsoring this award.

The success of ASONAM 2010 depends on the people and organizations that support it. We must thank all the volunteers who helped organize this conference. In particular, the program chairs Nasrullah Memon and Reda Alhajj who, together with the program committee, created a great technical program. In addition, I would like to thank the proceedings chair Jon Rokne, the publicity chairs Tansel Özyer, Malek Haroud, and Xingquan (Hill) Zhu, the publications chair Panagiotis Karampelas, and last but not least the local arrangements chair Rasmus Rosenqvist Petersen and our secretary Vibeke Nielsen.

The conference would not be possible without sponsors. The conference is organized in collaboration with IEEE Computer Society's technical committee on data engineering (technical co-sponsorship) and ACM SIGCHI. I would like to thank University of Southern Denmark for providing us with an excellent conference venue. I would also like to thank the other academic and industrial sponsors University of Calgary (Canada), Hellenic American University (Greece), Global University (Lebanon), and Springer for supporting this event. Finally, I wish to acknowledge the support of The Maersk Mc-Kinney Moller Institute for enabling me and other members of the local team to organize ASONAM 2010.

The ASONAM conference series will continue next year with ASONAM 2011 to be held in July 2011 in Kaohsiung, Taiwan. I hope to meet you all again in Kaohsiung!

Uffe Kock Wiil
General Chair, ASONAM 2010

A Note from ASONAM 2010 and OSINT-WM 2010 Program Chairs

Thanks to the advancement in technology and the recent recognition of social networks research as a multidisciplinary domain that heavily requires computing and automated tools. With this shift social networks terminology gained popularity. People started to live a virtual life in addition to the actual life. We could barely find someone who does not belong to at least one online social community. People communicate with two types of societies; the traditional society they belong to and physically live in, and the virtual society that includes people who mostly never met physically.

The new trend in communication crossed the borders of the one small community to globalization in communication and socialization. People perceive the web increasingly as a social medium that fosters interaction among people, sharing of experiences and knowledge, group activities, community formation and evolution. This can be seen as rising prominence of social network analysis and mining in academia, politics, homeland security and business. As a result, social network research has advanced significantly and shaped the need for the development of sophisticated social network analysis and mining techniques capable of handling the online social websites, email logs, phone logs and instant messaging systems. All these developments and the rising interest in social network analysis and mining motivated us to start this new conference. Since the first meeting in 2007, our target has been to put together a scientific conference that could meet the expectations of practitioners and researchers in all the disciplines covered by social networks. It took us two years to run the first International Conference on Advances in Social Network Analysis and Mining (ASONAM) in Athens, Greece in July 2009. The conference was hosted by the Hellenic American University and turned into a great success. As organizers we were delighted to meet and see close to 150 participants interacting and communicating their research findings. We started by keeping the bar fairly high and this turned the organization of ASONAM 2010 into a challenge. It was not easy to attract the high quality submissions and maintain 25% acceptance rate. The success would have not been possible without the full support of a strong international program committee that was expanded this year to include more research leaders who all worked extremely hard to evaluate the submitted papers.

ASONAM is intended to address important aspects of interest to practitioners and researchers with a specific focus on the emerging trends and industry needs associated with social networking analysis and mining. The conference solicits experimental and theoretical work on social network analysis and mining, including: (1) using graph theory and machine learning approaches or multi-agent based simulation for social network modeling, constructing scalable, customizable social network infrastructure, as well as the identification and discovery of dynamic growth and evolution patterns; (2) data mining advances on the discovery and analysis of communities, on personalization for solitary activities (like search) and social activities (like discovery of potential friends), on the analysis of user behavior in open fora (like conventional sites, blogs and fora) and in commercial platforms (like e-auctions) and on the associated security and privacy-preservation challenges.

A Note from ASONAM 2010 and OSINT-WM 2010 Program Chairs (Cont.)

ASONAM provides an interdisciplinary venue that sets the stage for sociologists, behavioral scientists, computer scientists, psychologists, anthropologists, and information systems scientists to exchange ideas, learn new concepts, and develop new methodologies. Activities included speeches from keynote speakers, oral and poster presentations. The main goal of ASONAM is to study and elaborate synergies between interdisciplinary venues as discussed above, and to provide a glimpse at the state of the art in the area.

This year we are excited to have OSINT-WM symposium co-located with ASONAM; also the Second International Workshop on Mining Social Networks for Decision Support is organized. The three events together provide a unique opportunity for the participants because of the interaction between their themes.

We are grateful for the dedicated work of both authors and program committee members who contributed their time to ensure the good quality of the technical program. The organization of this event was made possible through the support of the University of Southern Denmark, University of Calgary, Hellenic American University in Athens and Global University in Beirut, IEEE, ACM and Springer. Special thanks to Stephen Soehnlen from Springer Wien who have been always encouraging and supportive.

More than 80 papers will be presented and discussed in Odense between 9 and 11 August 2010. The manuscripts reflect the evolving state of social network analysis and mining; they report the original discoveries of researchers from more than 25 countries. Each contributor to this conference does indeed add fresh views and thoughts, challenges our beliefs, and encourages further exploration and innovation on our part. We are grateful to each participant for providing the opportunity to share the invaluable ideas.

With the hope that this conference will open even wider awareness of knowledge, we welcome you to the SDU campus in Odense to enjoy the wonderful program of ASONAM 2010 and encourage you to start working on your submission to ASONAM 2011; we look forward to meeting you again in July 2011 in Kaohsiung, Taiwan.

Nasrullah Memon and Reda Alhajj
Program Chairs/Editors

A Message from the General Chairs of OSINT-WM 2010

Today we are witnessing an increase of data available from a multitude of sources which calls for research in ways how to cope with the amount of data. Especially the Open Source Intelligence community faces tough challenges on how to retrieve, extract and analyse data to gain insights from public sources. Each of these three core processes is the subject of ongoing research resulting in specialised techniques.

The aim of the International Symposium on Open Source Intelligence and Web Mining is to provide an international forum for researchers, professionals, and industrial practitioners to share their knowledge. We believe that such an exchange of latest research results and insights from practitioners has the potential to cross-fertilise equally the scientific community and the user community of OSINT tools and techniques.

Organising such a symposium would not be possible without the help and dedicated work of many individuals. First and foremost we thank our Program Chairs, Nasrullah Memon and Reda Alhajj. Our Publicity Chairs and Co-Chairs Tansel Özyer, Ahmen Kassim, Xingquan Zhu as well our Publications Chair Panagiotis Karampelas. Last but not least our Local Arrangement Chair Rasmus Rosenqvist Petersen and his team and our web developer Muniba Shaikh.

The OSINT-WM 2010 was previously co-hosted with the International Conference on Information Visualisation. This year it is held for the first time in conjunction with the 2010 International Conference on Advances in Social Networks Analysis and Mining (ASONAM). We do believe this is a timely move and an excellent match. The symposium has received support from numerous organisations, such as the Hellenic American University in Greece, the Global University in Beirut, the University of Southern Denmark, the University of Calgary, the Open Source Intelligence Branch of the Dutch Ministry of Defence and the Joint Research Centre of the European Commission.

Welcome to Odense, we hope that you enjoy the symposium and your stay in Denmark.

For 2011 OSINT-WM symposium will be held in conjunction with ASONAM 2011 in July 2011 in Kaohsiung, Taiwan. After enjoying the combination of OSINT-WM 2010 and ASONAM 2010 in Odense this year, we hope you will add OSINT-WM 2011 in Kaohsiung to your schedule!

Arno H.P. Reuser
Head, Bureau Open Source Intelligence, Ministry of Defence, The Netherlands
Gerhard Wagner
Institute for the Protection and Security of the Citizen, European Commission, Italy
Uffe Kock Wiil
University of Southern Denmark

Program at a glance

Monday, August 9, 2010

08:00-08:45	Registration
08:45-09:00	Opening: Welcome Session
09:00-10:00	Keynote: **Stan Wasserman: Data Mining for Networks - The Good and the Bad**
10:00-10:30	Coffee Break / Poster Session
10:30-12:30	**Session: Applications of Social Networks**
	Session: Social Network Analysis
	Workshop on Mining Social Networks for Decision Support
12:30-13:45	Lunch Break
13:45-14:45	Keynote: **Johny Engell-Hansen: Enhancing Early Warning with Open Source Intelligence**
14:45-15:15	Coffee Break / Poster Session
15:15-17:25	**Session: Social Aspects I**
	Session: Algorithms for Social Networks I
	Session: Detecting Various Aspects in Social Networks
17:30	End of first day
19:00-21:00	Reception

Tuesday, August 10, 2010

08:30-09:00	Registration (Conference Desk)
09:00-10:00	Inaugural Talk OSINT-WM 2010: **Arno H.P. Reuser: Please Hurry**
10:00-10:30	Coffee Break / Poster Session
10:30-11:30	Invited Talk: **Jakub Piskorski: Multilingual Event Extraction for Border Security Intelligence Gathering**
11:30-12:45	**Open Source INTelligence and Web Mining 2010 Symposium**
	Session: Social Aspects II
	Session: Models for Social Networks I
12:45-14:00	Lunch Break
13:45-14:45	Invited Talk: **Berto Jongman: Trends in Terrorist Propaganda**
14:45-15:15	Coffee Break / Poster Session
15:15-16:15	Keynote: **Andrew Chester: Operating Risk Intelligence in an Age of Information Abundance**
16:30	End of second day
18:00-22:00	Social Event

Wednesday, August 11, 2010

08:30-09:00	Registration (Conference Desk)
09:00-10:00	Keynote: **Chris Pallaris: Bridging the "Two Cultures" of Open Source Intelligence**
10:00-10:30	Coffee Break / Poster Session
10:30-12:30	**Session: Clustering, Data Mining & Identification**
	Session: Privacy and Security
	Session: Algorithms for Social Networks II
12:30-13:45	Lunch Break
13:45-15:30	**Session: Representation, Visualization, and Interaction**
	Session: Models for Social Networks II
	Session: Recommendation and Prediction
15:30-16:00	Coffee Break / Poster Session
16:00-16:30	Closing Session / Paper Awards
16:30	End of the third day - End of the conference

Keynote Speakers

Keynote	Data Mining for Networks - The Good and the Bad	
	**Stanley Wasserman** Department of Statistics and Department of Psychological and Brain Sciences Indiana University	
09:00-10:00	Monday, August 9, 2010	Room: O-100
Chair:	Uffe Kock Wiil	

Abstract

Data mining of network data often focuses on classification methods from machine learning, statistics, and pattern recognition perspectives. These techniques have been described by many, but many of these researchers are unaware of the rich history of classification and clustering techniques originating in social network analysis.

The growth of rich social media, on-line communities, and collectively produced knowledge resources has greatly increased the need for good analytic techniques for social networks. We now have the opportunity to analyze social network data at unprecedented levels of scale and temporal resolution; this has led to a growing body of research at the intersection of the computing, statistics, and the social and behavioral sciences.

This talk discusses some of the current challenges in the analysis of large-scale social network data, focusing on the inference of social processes from data. The invasion of network science by computer scientists has produced much interesting, both good and bad, research.

Short Bio

Stan Wasserman, an applied statistician, joined the Departments of Sociology and Psychology at Indiana University in Bloomington in Fall 2004, as Rudy Professor of Statistics, Psychology, and Sociology. He also has an appointment in the Karl F. Schuessler Institute for Social Research. Prior to moving to Indiana, he held faculty positions at Carnegie-Mellon University, University of Minnesota, and University of Illinois, in the disciplines of Statistics, Psychology, and Sociology; in addition, at Illinois, he was a part-time faculty member in the Beckman Institute of Advanced Science and Technology, and has had visiting appointments at Columbia University and the University of Melbourne. In 2005, he helped create the new Department of Statistics in Bloomington, and became its first chair in 2006.

Wasserman is best known for his work on statistical models for social networks and for his text, co-authored with Katherine Faust, Social Network Analysis: Methods and Applications. His other books have been published by Sage Publications and Cambridge University Press. He has published widely in sociology, psychology, and statistics journals, and has been elected to a variety of leadership positions in the Classification Society of North America and the American Statistical Association. He teaches courses on applied statistics.

He is a fellow of the Royal Statistical Society, and an honorary fellow of the American Statistical Association and the American Association for the Advancement of Science. He has been an Associate Editor of a variety of statistics and methodological journals (Psychometrika, Journal of the American Statistical Association, Sociological Methodology, to name a few), as well as the Book Review Editor of Chance. His research has been supported over the years by NSF, ONR, ARL, and NIMH.

Wasserman was also Chief Scientist of Visible Path Corporation in Foster City, California, a software firm engaged in developing social network analysis for corporate settings. He currently blogs at http://www.iq.harvard.edu/blog/netgov/ He was educated at the University of Pennsylvania (receiving two degrees in 1973) and Harvard University (Ph.D., in Statistics, 1977).

Website: http://mypage.iu.edu/~stanwass/

Keynote Speakers

Keynote	Enhancing Early Warning with Open Source Intelligence

Johnny Engell-Hansen

Head of Operations Unit, Council of the European Union
General Secretariat / EU Situation Centre
Rue de la Loi 175, BE 1048 Brussels

13:45-14:45	Monday, August 9, 2010	Room: O-100
Chair:	Per Michael Johansen	

Abstract

Open Source Intelligence can play an important role in producing early warnings about developing international crises. A timely and relevant warning buys time to involve international policy makers in creating the needed policy action to mitigate possible effects of a crisis.

The European Union relies on its own Situation Centre (EU SITCEN) to produce early warnings based on, among other things, intelligence derived from open sources. First, the talk gives an overview about the exact role and responsibility of the EU SITCEN. Secondly, the process it uses to acquire and process information from all kind of sources is described. Finally, the talk explains how OSINT contributes to create early warnings. The nature of OSINT contributions and its relation with other kinds of sources, e.g. Intelligence, will be discussed.

Short Bio

Johnny Engell-Hansen joined the General Secretariat of the Council of the European Union in 1994 and is currently Head of Operations Unit in the EU Situation Centre. The Unit's areas of responsibility include; monitoring and assessing world-wide events on a 24/7 basis and alerting senior EU officials and EU Member States to politically significant events; Open Sources Intelligence capability; deployable teams to ensure strategic information in a crisis situation; provision of core infrastructures (human and material) to support EU decision-making in case the EU Emergency and Crisis Coordination Arrangements are triggered; and implementation of IT platforms to optimise information exchange between the EU Situation Centre and its customers/partners in EU institutions, EU Member States and other international organisations.

Johnny Engell-Hansen has participated in work in support of the development of African Union early warning capabilities, e.g. its Situation Room, its Open Sources information system and its "Continental Early Warning System". He has served as an adviser to the EU border management agency FRONTEX on the setting up of its own Situation Centre.

Johnny Engell-Hansen has been a co-initiator in the creation of a forum for cooperation and information exchange between bodies within International Organisations responsible for "early warning" and "crisis response".

Other professional activities include participation in fora aiming to enhance the exploitation of Open Sources information (e.g. the Budapest Club, an informal gathering of EU government officials). He is also a frequent speaker / participant in conferences and workshops dealing with "early warning" and "crisis response".

Within the EU General Secretariat of the Council Johnny Engell-Hansen has previously held positions in departments dealing with Energy Policy and Organisational Development. In the framework of an exchange programme he was seconded to the German Federal Ministry of Foreign Affairs and the German Federal Ministry of Defence in 2002.

Prior to joining the EU General Secretariat of the Council Johnny Engell-Hansen had a career as an officer in the Danish Armed Forces. During this career he was, among other things, seconded to the EU Monitoring Mission in ex-Yugoslavia in 1993 where he served in Croatia, Bosnia-Herzegovina and Albania.

Keynote Speakers

Inaugural Talk	Please Hurry	
	**Arno H. P. Reuser** Chief, Open Source Intelligence Defence Intelligence and Security Service The Netherlands	
09:00-10:00	Tuesday, August 10, 2010	Room: O-100
Chair:	Lars Dyhr	

Abstract

The world of information is seeing almost as much change today as it did back in the early 16th century when moveable type bookprinting was invented by Johannes Gutenberg. It took him some time to print his world famous 42 line bible, but just a few years later the technology had advanced so rapidly that Martin Luthers 95 theses could be disseminated in about 300.000 copies in two years!

Early this year the rise of social networks has shown to be fenomenal. The number of queries in Facebook has for the first time surpassed the number of queries in Google. The number of Tweets reaches 50m per day. Although there is also news that indicates that Twitter is actually on the decline. Email is certainly on the decline, gradually being replaced by communication through social networks.

Crime too, makes increased use of the Net and social networks. Microsoft claims 50bn spam messages per day. Ebay is increasingly being used for fraud. It is so much easier to steal 10 euro about 50 million times than to break in a bank or two for which you need the whole night. Banks in the NL are victims of fraud, many webshops considered to be a Walhalla of fraud. People are very careless with the Internet. On Twitter it is completely normal to inform the world you are NOT at home (www.pleaserobme.com).

Remember the Dragon Hack? And the break in attempts at Google and other big US firms, a crime attributed to PR China? Facebook and the like are even used for murder.

Social networks are a gold mine for terrorists and criminals alike. Acccording to the Simon Wiesenthal Center the use of Facebook, YouTube and Twitter by militant groups grew 20% in 2009. All that data (almost) is available in open sources such as weblogs, forums, newspapers, video, SMS messages, social network sites, journals, radio broadcast, etc. The by far majority of information is no longer available in text but in some other format. We have the analysts to interpret the information, to analyse it and produce actionable intelligence. What we do NOT have is scientists to create that information from the raw data. That is where you, conference delegates, come in. To produce the single, ultimate, all encompassing, universal 100% reliable algorithm to find the answers in network analyses. You have exactly three days to do it!

Short Bio

Arno Reuser is a professional librarian / information professional with more than 30 years experience in information handling and -processing. He founded the Open Source Intelligence Unit of the Dutch Defence Intelligence & Security Service about 15 years ago and still heads it today. Mr. Reuser holds a bachelor degree in librarianship and has completed many courses in digital information management, Internet search strategies, update workshops etc. He learned the technical requirements of today's digital world by learning how to write software, program scripts to automate tasks, building websites, getting the most out of the Internet by studying network theory, all in support of OSINT information management.

In addition to his work with the Dutch Defence and Intelligence Service, Arno established his own company "Reuser's Information Services" in conjunction with his current position as head of OSINT. RIS' primary goal is to teach Open Source Intelligence (systematic searching, finding and reporting with security in mind) and provide consultancy for government and private sector institutions worldwide.

Arno has an extensive history of teaching OSINT, and OSINT training has been a core focus of his professional activities for decades. Today, he teaches OSINT, search strategies, information handling and security to a wide range of audiences. He travels regularly to the United States, Switzerland, Austria, and United Kingdom to teach to a wide range of multilingual, multicultural audiences and is thus used to communicating with people from different backgrounds and possessing different language skills. Arno is a recognized expert on OSINT and speaks regularly at international conferences and workshops on the organization and maintenance of Open Source Intelligence Services, at home and abroad, for a diverse audience such as international organizations, government institutes, intelligence, military, and information professionals.

Keynote Speakers

Keynote	Operating Risk Intelligence in an Age of Information Abundance	
	**Andrew Chester** Juno Risk Solutions Annapolis, Maryland	
15:15-16:15	Tuesday, August 10, 2010	Room: O-100
Chair:	Jon Rokne	

Abstract

Intelligence is what business refers to as risk assessment. While financial risk management has matured in recent decades – along with a solid discipline based upon quantitative measures of risk – other non-financial operating risks have not been systematically treated with the predictive analytics, data mining or knowledge management tools that have been emerging. This corporate need can draw its intellectual lineage from government and military intelligence doctrines developed over the last 60 years; the requirements of the corporate risk intelligence community are richer, more quantitative and heavily reliant upon open sources for their information solutions. This presentation will define the relationship and highlight the distinctions between government and corporate risk intelligence needs. It will argue that the exacting needs of business decisions require a quantification of risk to a much greater extent than the typical intelligence consumer. The focus for solution development should be on discovering, vetting and exploiting unique data and open information sources for quantifiable decision-making in a scalable and repeatable fashion. It will conclude with a framework for approaching the development of operating risk solutions using technology to exploit a dynamic interaction between risk takers and risk modelers.

Short Bio

Chester worked for two decades in Canadian naval intelligence, where he pioneered the application of open sources of information to a broad range of intelligence problems. He was the principal architect of the Canadian Maritime Network, a command and control system that coordinated all Canadian federal maritime surveillance efforts. On behalf of NATO, Chester developed and directed its Open Source Intelligence (OSINT) Initiative. In this role, he spearheaded a groundbreaking innovation to integrate commercial information sources with classified intelligence. Chester authored several prominent monographs on analytic techniques and international trade, including a piece titled "Intelligence Exploitation of the Internet," and co-authored "The NATO Open Source Intelligence Handbook."

Following his naval career, he has continued his work fusing intelligence, business and legal concepts into information solutions for governments and corporations. He has created intelligence solutions for corporate risk, border security and trade-based risk assessment. Chester serves as a principal in Juno Risk Solutions, an international provider of products and services that enables companies to embed transaction risk quantification into their business processes. He is a graduate of the Royal Military College of Canada and the U.S. Naval War College. Chester also earned a master's degree from the Norman Patterson School of International Affairs at Carleton University, and holds a J.D. from the College of William & Mary School of Law. He is a member of the Virginia State Bar.

Keynote Speakers

Keynote	Bridging the "Two Cultures" of Open Source Intelligence	
	**Chris Pallaris** Director and Principal Consultant i-intelligence	
09:00-10:00	Wednesday, August 11, 2010	Room: O-100
Chair:	Panagiotis Karampelas	

Abstract

Fifty years ago, the physicist C. P Snow coined the "two cultures" to describe the failure of communication between the sciences and the humanities. Snow argued that mutual ignorance and incomprehension were a hindrance to tackling the challenges of his day. For all its flaws, Snow's thesis remains worryingly relevant, no less to OSINT professionals. Our discipline is increasingly divided between analysts and technologists: the former struggle to grasp technology's potential, while the latter often fail to appreciate the human challenges associated with OSINT collection and analysis. Mutual incomprehension extends to all aspects of our work: analysts are tasked with anticipating the future; technologists with building it. Analysts grapple the with messiness and uncertainty of global affairs and the limits of human cognition; technologists are expected to answer the most complex questions using binary truths. Bridging these cultures is essential to making OSINT the dominant intelligence paradigm of the 21st century. This talk will explore what effect these cultures are having on the business of open source intelligence and how the resulting problems can be alleviated. Further, it will explore whether OSINT professionals can work towards the much-discussed "third culture", one founded on a mutual understanding of how information - as both a physical entity and theoretical construct - can help tackle the challenges of our day.

Short Bio

Chris Pallaris is the Director and Principal Consultant of i-intelligence. He leads and coordinates the company's training and consulting activities in Switzerland and beyond. Previous to this, Chris served as Executive Editor and Head of Strategy and Open Source Intelligence at the International Relations and Security Network (ISN), ETH Zurich. He established the ISN's OSINT unit and coordinated its intelligence-related projects with Swiss and European stakeholders. Earlier, he served as the ISN's Executive Editor where he led the development of the organization's news and information services and its global network of partners and correspondents. His professional experience also includes competitive intelligence, journalism, information and knowledge management, network building, strategy consulting, and organizational development. A graduate of the London School of Economics and Political Science, Chris serves on the board of the European Open Source Intelligence (EUROSINT) Forum, where he also chairs a working group on best practices in OSINT.

Invited Speakers

Invited Talk	Multilingual Event Extraction for Border Security Intelligence Gathering

Jakub Piskorski
Research and Development Unit,
Frontex

10:30-11:30	Tuesday, August 10, 2010	Room: O-100
Chair:	Reda Alhajj	

Abstract

This talk gives an overview of an effort on deploying news event extraction technology for border security intelligence gathering and real-time situation monitoring for Frontex, the European Agency for the Management of Operational Cooperation at the External Borders of the Member Stated of the European Union. In particular, a hybrid multilingual event extraction system has been constructed on top of the Europe Media Monitor, a large-scale news monitoring aggregation engine. The hybrid system integrates two existing event extraction engines, namely, NEXUS - developed by the Joint Research Centre of the European Commission, and PULS - developed by the University of Helsinki. The presentation explains the entire event extraction processing chain and highlights various aspects of information access, moderation and visualization.

Short Bio

Jakub Piskorski received his M.Sc in Computer Science from the University of Saarbrücken, Germany in 1994 and Ph.D from the Polish Academy of Sciences in Warsaw, Poland in 2002. His areas of interest are centered around finite-state technology, shallow text processing, information extraction, efficient application oriented natural language processing solutions and open source intelligence. Jakub is currently working in the Research & Development Unit of the Warsaw-based EU Border Security Agency Frontex and he is also a Research Associate at the Polish Academy of Sciences in Warsaw. Previously he has worked for the Joint Research Centre of the European Commission, the German Research Centre for Artificial Intelligence in Saarbruecken and the Department of Information Systems at Poznan University of Economics. He also has been consulting several companies on text mining and information extraction technology. Jakub is author and co-author of around 80 peer-reviewed international conference papers and journal articles, which cover various topics related to natural language processing, text mining and security applications.

Invited Speakers

Invited Talk	Trends in Terrorist Propaganda

Berto Jongman
Dutch Ministry of Defense
The Netherlands

13:45-14:45	Tuesday, August 10, 2010	Room: O-100
Chair:	Gerhard Wagner	

Abstract

Without communication there can be no terrorism. This was a conclusion drawn a quarter century ago and it still holds true. Without effective communications, a terrorist movement would be unable to recruit new members into its ranks, motivate and inspire existing members to carry on with the struggle despite formidable odds as well as expand the pool of active supports and passive sympathizers from the movement draws its sustenance. Bruce Hoffman recently indicated that the art of terrorist communication has now evolved to the point where terrorists can effortlessly and effectively control the communication of their ideology of hate, intolerance and violence: determining the content, context and medium over which their message is projected; and towards precisely the audience (or multiple audiences) they seek to reach. A decade ago there were about twelve terrorist group websites. Since then the number has increased to well over 7,000 such sites. Virtually every terrorist group in the world today has its own Internet website and, in many instances, maintain multiple sites in different languages with different messages tailored to specific audiences. The amount expanding amount of terrorist propaganda has been the subject of research by law enforcement and intelligence services. A small cottage industry of research institutions has developed which analyze the output of terrorist organizations. In the presentation the results will be shown of the work of number of these institutions (e.g. SITE Intelligence group, ICT's Jihadi Website Monitoring Group). Their efforts offer important clues with respect to ongoing terrorist plans, emerging modus operandi, communication strategies of different terrorist organizations and increasing skills in exploiting the Internet for operational purposes.

Short Bio

Albert J. Jongman (1955) majored in western sociology at the University of Groningen in 1981. During his studies he gained practical experience as a research assistant at the Stockholm International Peace Research Institute (SIPRI) in Sweden. From 1982 to 1987 he worked as a researcher at the Polemological Institute of the University of Groningen where he dealt with several research topics including the quantitative study of war, political violence, armament and disarmament issues and human rights. In 1987 he moved to the University of Leiden where he acted as Data Manager of the Project on Interdisciplinary Research on the Root Causes of Gross Human Rights Violations (PIOOM). He also worked on several research projects, including the World Conflict and Human Rights Map, 20th Century Genocides and Monitoring Human Rights Violations. In 2002 he moved from academia to government. Since early 2002 he works as a senior terrorism analyst for the Dutch Ministry of Defense. His 'World Directory of Terrorist and other Organizations associated with Guerrilla Warfare, Political Violence and Protest,' was included in the award-winning 'Political Terrorism. A New Guide to Actors, Authors, Concepts, Data Bases, Theories, and Literature' (2nd edition, 1988) edited by Alex P. Schmid. During the 1990s he regularly contributed to the Dutch Yearbook on Peace and Security. Currently an update of Political Terrorism is being prepared under the title Handbook of Terrorism Research that will be published by Routledge in 2010. In his current function he participates in a number of Advanced Research Working Groups of NATO and in activities of the Dutch National Coordinator for Counterterrorism.

Conference Program

Monday, August 9, 2010

08:00-08:45	Registration
Conf. Desk	
08:45-09:00	Opening: Welcome Session
Room: O-100	
09:00-10:00	Keynote: **Stan Wasserman: Data Mining for Networks - The Good and the Bad**
Room: O-100	Chair: Uffe Kock Wiil
10:00-10:30	Coffee Break / Poster Session
Panorama	
10:30-12:30	**Session: Applications of Social Networks**
Room: O-99	Chair: Darko Obradović
	A Social Network Analysis and Mining Methodology for the Monitoring of Specific Domains in the Blogosphere
	Darko Obradović, Stephan Baumann and Andreas Dengel
	Learning from the Past: An Analysis of Person Name Corrections in DBLP Collection and Social Network Properties of Affected Entities
	Florian Reitz and Oliver Hoffmann
	The Structure of the Computer Science Knowledge Network
	Manh Cuong Pham and Ralf Klamma
	Business-oriented Analysis of a Social Network of University Students
	Vincent Labatut and Jean-Michel Balasque
10:30-12:30	**Session: Social Network Analysis**
Room: O-95	Chair: Jon Rokne
	Product adoption networks and their growth in a large mobile phone network
	Pål Roe Sundsøy, Johannes Bjelland, Geoffrey Canright, Kenth Engø-Monsen and Rich Ling
	Labeling Communities using Structural Properties
	Mohan Saravanan, Garigipati Prasad, Karishma Surana and Dew Suganthi
	Online social network popularity evolution: an additive mixture model
	Thomas Couronne, Alina Stoica and Jean-Samuel Beuscart
	Community Aware Personalized Web Search
	Omair Shafiq, Reda Alhajj and Jon G. Rokne
	Enriching and Simplifying Communication by Social Prioritization
	Juwel Rana, Johan Kristiansson and Kåre Synnes
10:30-12:30	**Workshop on Mining Social Networks for Decision Support**
Room: O-96	Chair: I-Hsien Ting
Workshop	**Automatic Detection of Social Tag Spams Using a Text Mining Approach**
	Hsin-Chang Yang and Chung-Hong Lee
Workshop	**Improving marketing response by data mining in social network**
	Jerzy Surma and Anna Furmanek
Workshop	**Identifying Themes in Social Media and Detecting Sentiments**
	Jayanta Kumar Pal and Abhisek Saha
Workshop	**A Hierarchical Algorithm for Clustering Extremist Web Pages**
	Xingqin Qi, Kyle Christensen, Robert Duval, Edgar Fuller, Arian Spahiu, Qin Wu and Cun-Quan Zhang
Workshop	**A Dynamic and Task-Oriented Social Network Extraction System Based on Analyzing Personal Social Data**
	Kai-Yu Wang, I-Hsien Ting, Hui-Ju Wu and Pei-Shan Chang
12:30-13:45	Lunch Break
Restaurant	

Conference Program

Monday, August 9, 2010

13:45-14:45	Keynote: **Johny Engell-Hansen: Enhancing Early Warning with Open Source Intelligence**
Room: O-100	Chair: Per Michael Johansen
14:45-15:15	Coffee Break / Poster Session
Panorama	
15:15-17:25	**Session: Social Aspects I**
Room: O-99	Chair: Hsin-Chang Yang
	Empirical Study of Social Features' Roles in Buyers' Complex Decision Making
	Li Chen
	Detecting Social Positions using Simulation
	Joel Brynielsson, Johanna Högberg, Lisa Kaati, Christian Mårtenson and Pontus Svenson
	What Can the Temporal Social Behavior Tell Us? An Estimation of Vertex-Betweenness Using Dynamic Social Information
	Jing-Kai Lou, Shou-de Lin, Kuan-Ta Chen And Chin-Laung Lei
	Opinion Detection in Blogs: What is still Missing?
	Malik Muhammad Saad Missen, Mohand Boughanem and Guillaume Cabanac
	Analyzing the Blogosphere for Predicting the Success of Music and Movie Products
	Fabian Abel, Ernesto Diaz-Aviles, Nicola Henze, Daniel Krause and Patrick Siehndel
15:15-17:25	**Session: Algorithms for Social Networks I**
Room: O-95	Chair: Vladimir Baltik
	Incremental Detection of Local Community Structure
	L. Karl Branting
	Application of Genetic Algorithms to the Identification of Website Link Structure
	Rocío Martínez Torres, Beatriz Palacios Florencio, Sergio Toral Marín and Federico Barrero García
	Iterative Annotation of Multi-relational Social Networks
	Stéphane Peters, Ludovic Denoyer and Patrick Gallinari
	Efficient Extraction of High-Betweenness Vertices
	Wen Haw Chong, Wei Shan Belinda Toh and Loo Nin Teow
	Detecting Communities in Massive Networks based on Local Community Attractive Force Optimization
	Qi Ye, Bin Wu, Yuan Gao and Bai Wang
15:15-17:25	**Session: Detecting Various Aspects in Social Networks**
Room: O-96	Chair: John Yearwood
	Profiling Phishing Emails Based on Hyperlink Information
	John Yearwood, Musa Mammadov and Arunava Banerjee
	Assessing Expertise Awareness in Resolution Networks
	Yi Chen, Shu Tao, Xifeng Yan, Nikos Anerousis, Qihong Shao
	Faving Reciprocity in Content Sharing Communities: A comparative analysis of Flickr and Twitter
	Jong Gun Lee, Panayotis Antoniadis and Kavé Salamatian
	Identifying Networks of Semantically-Similar Individuals from Public Discussion Forums
	James A. Danowski
	The Effect of Network Realism on Community Detection Algorithms
	Günce K. Orman and Vincent Labatut
17:30	End of first day
19:00-21:00	Reception
Location:	Hans Christian Andersen Museum, Bangs Boder 29, 5000 Odense C

Conference Program

Tuesday, August 10, 2010

08:30-09:00	Registration
Conf. Desk	
09:00-10:00	Inaugural Talk OSINT-WM 2010: **Arno H.P. Reuser: Please Hurry**
Room: O-100	Chair: Lars Dyhr
10:00-10:30	Coffee Break / Poster Session
Panorama	
10:30-11:30	Invited Talk: **Jakub Piskorski: Multilingual Event Extraction for Border Security Intelligence Gathering**
Room: O-100	Chair: Reda Alhajj
11:30-12:45	**Open Source INTelligence and Web Mining 2010 Symposium**
Room: O-99	Chair: Gerhard Wagner and Arno Reuser
Symposium	**A Global Measure for Estimating the Degree of Organization of Terrorist Networks**
	Khaled Dawoud, Reda Alhajj and Jon Rokne
Symposium	**Detecting New Trends in Terrorist Networks**
	Uffe Kock Wiil, Nasrullah Memon and Panagiotis Karampelas
Symposium	**Text-Based Web Page Classification with Use of Visual Information**
	Vladimír Bartík
Symposium	**A Case Study of Open Source and Public Participation in Catalyzing Social Innovations**
	Helen K. Liu and Jodi Sandfort
11:30-12:45	**Session: Social Aspects II**
Room: O-95	Chair: Sofus A. Mackassy
	Leveraging contextual information to explore posting and linking behaviors of bloggers
	Sofus A. Macskassy
	White's Three Disciplines and Relative Valuation Order: Countering the social ignorance of automated data collection and analysis
	Steven McDermott
	Detecting Leaders in Behavioral Networks
	Ilham Esslimani, Armelle Brun, Anne Boyer
11:30-12:45	**Session: Models for Social Networks I**
Room: O-96	Chair: Mikolaj Morzy
	Tracking the Evolution of Communities in Dynamic Social Networks
	Derek Greene, Dónal Doyle and Pádraig Cunningham
	Rhythm and Randomness in Human Contact
	Mervyn P. Freeman, Nicholas W. Watkins, Eiko Yoneki, and Jon Crowcroft
	An Analysis of Communities in Different Types of Online Forums
	Mikołaj Morzy
12:45-14:00	Lunch Break
Restaurant	
13:45-14:45	Invited Talk: **Berto Jongman: Trends in Terrorist Propaganda**
Room: O-100	Chair: Gerhard Wagner
14:45-15:15	Coffee Break / Poster Session
Panorama	
15:15-16:15	Keynote: **Andrew Chester: Operating Risk Intelligence in an Age of Information Abundance**
Room: O-100	Chair: Jon Rokne
16:30	End of second day
18:00-22:00	Social Event

Conference Program

Wednesday, August 11, 2010

08:30-09:00	Registration
Conf. Desk	
09:00-10:00	Keynote: **Chris Pallaris: Bridging the "Two Cultures" of Open Source Intelligence**
Room: O-100	Chair: Panagiotis Karampelas
10:00-10:30	Coffee Break / Poster Session
Panorama	
10:30-12:30	**Session: Clustering, Data Mining & Identification**
Room: O-99	Chair: James A. Danowski
	A Multiobjective and Evolutionary Clustering Method for Dynamic Networks
	Francesco Folino and Clara Pizzuti
	Overlapping Community Detection by Collective Friendship Group Inference
	Bradley S. Rees and Keith B. Gallagher
	Clustering Social Networks Using Distance-preserving Subgraphs
	Ronald Nussbaum, Abdol-Hossein Esfahanian, and Pang-Ning Tan
	Web Clustering Using Social Bookmarking Data with Dimension Reduction Regarding Similarity
	Hidekazu Yanagimoto, Michifumi Yoshioka and Sigeru Omatu
	Key player identification: a note on weighted connectivity games and the Shapley value
	Roy Lindelauf and Iris Blankers
	Dynamic Features of Social Tagging Vocabulary: Delicious, Flickr and YouTube
	Daifeng Li, Ying Ding, Zheng Qin, Staša Milojević, Bing He, Erjia Yan and Tianxi Dong
10:30-12:30	**Session: Privacy and Security**
Room: O-95	Chair: Leon S. L. Wang
	A Framework for Improved Adolescent and Child Safety in MMOs
	Lyta Penna, Andrew Clark and George Mohay
	Measuring Link Importance in Terrorist Networks
	Uffe Kock Wiil, Jolanta Gniadek and Nasrullah Memon
	Optimizing Multiple Centrality Computations for Reputation Systems
	Christian von der Weth, Klemens Böhm and Christian Hütter
	New Approach to Manage Security Against Neigborhood Attacks in Social Networks
	B. K. Tripathy and Gouri Kumar Panda
	Virus Propagation Modeling in Facebook
	Wei Fan and Kai Hau Yeung
10:30-12:30	**Session: Algorithms for Social Networks II**
Room: O-96	Chair: Petteri Hintsanen
	Fast Discovery of Reliable Subnetworks
	Petteri Hintsanen, Hannu Toivonen and Petteri Sevon
	Detecting highly overlapping communities with Model-based Overlapping Seed Expansion
	Aaron McDaid and Neil Hurley
	Quest: An Adaptive Framework for User Profile Acquisition from Social Communities of Interest
	Nima Dokoohaki and Mihhail Matskin
	Information propagation analysis in a social network site
	Matteo Magnani, Danilo Montesi and Luca Rossi

Conference Program

Wednesday, August 11, 2010

12:30-13:45	Lunch Break
Restaurant	
13:45-15:30	**Session: Representation, Visualization, and Interaction**
Room: O-99	Chair: Federico Neri
	Pixel-Oriented Visualization of Change in Social Networks
	Klaus Stein, René Wegener and Christoph Schlieder
	Using Vector Clocks to Visualize Communication Flow
	Martin Harrigan
	COSI: Cloud Oriented Subgraph Identification in Massive Social Networks
	Matthias Bröcheler, Andrea Pugliese and V.S. Subrahmanian
	Visualizing the evolution of users' profiles from online social networks
	Dieudonné Tchuente, Marie-Françoise Canut, Nadine Baptiste Jessel, André Péninou, Anass El Haddadi
13:45-15:30	**Session: Models for Social Networks II**
Room: O-95	Chair: Pal-Roe SundsoY
	Semi-Supervised Classification of Network Data Using Very Few Labels
	Frank Lin and William W. Cohen
	How to Forget the Second Side of the Story: A New Method for the One-Mode Projection of Bipartite Graphs
	Katharina A. Zweig
	A study on social network metrics and their application in trust networks
	Iraklis Varlamis, Magdalini Eirinaki and Malamati Louta
	Subjective Document Classification using Network Analysis
	Minkyoung Kim, Byoung-Tak Zhang and June-Sup Lee
13:45-15:30	**Session: Recommendation and Prediction**
Room: O-96	Chair: Tansel Ozyer
	A Unified Framework for Link Recommendation Using Random Walks
	Zhijun Yin, Manish Gupta, Tim Weninger, Jiawei Han
	Mining Interaction Behaviors for Email Reply Order Prediction
	Byung-Won On, Ee-Peng Lim, Jing Jiang, Amruta Purandare and Loo-Nin Teow
	Crumblr: Aggregation and Sharing of Spatial Content in Mobile Environments
	Dragan Šunjka, Darko Obradović and Andreas Dengel
	A Movie Rating Prediction Algorithm with Collaborative Filtering
	O. Bora Fikir, Iker O. Yaz and Tansel Özyer
	Supervised Machine Learning applied to Link Prediction in Bipartite Social Networks
	Nasserine Benchettara, Rushed Kanawati and Céline Rouveirol
15:30-16:00	Coffee Break / Poster Session
Panorama	
16:00-16:30	Closing Session / Paper Awards
Room: O-100	
16:30	End of the third day - End of the conference

Conference Program

Monday 9, August, 2010

Coffee Breaks	**ASONAM 2010 Poster Session**
Panorama	
	An Empirical Analysis on Social Capital and Enterprise 2.0 Participation in a Research Institute
	Ferron Michela, Frassoni Marco, Massa Paolo, Napolitano Maurizio, Setti Davide
	Community Comparison in Communication Networks
	Belkacem Serrour and Hamamache Kheddouci
	Hierarchy in Germany's Corporate Network
	Mishael Milaković, Matthias Raddant, and Laura Birg
	A multidisciplinary model of dynamic and semantic social networks analysis for institutions
	Christophe Thovex and Francky Trichet
	Comparison of feature-based criminal network detection models with k-core and n-clique
	Fatih Ozgul, Zeki Erdem, Chris Bowerman and Claus Atzenbeck
	Designing, Analyzing and Exploiting Stake-based Social Networks
	Tsung-Ting Kuo, Jung-Jung Yeh, Chia-Jen Lin, Shou-De Lin
	Mining Potential Partnership through Opportunity Discovery in Research Networks
	Alessandro Cucchiarelli and Fulvio D'Antonio
	Augmenting Rapid Clustering Method for Social Network Analysis
	J. Prabhu, M. Sudharshan, M. Saravanan and G.Prasad
	Linking Collaborative Filtering and Social Networks: Who are my Mentors?
	Armelle Brun and Anne Boyer
	Finding Patterns of Students' Behavior in Synthetic Social Networks
	Gamila Obadi, Pavla Dráždilová, Jan Martinovič, Kateřina Slaninováy and Václav Snášel
	Social Network Analysis of Iran's Green Movement Opposition Groups using Twitter
	Kaveh Ketabchi Khonsari, Zahra Amin Nayeri, Ali Fathalian and Leila Fathalian
	A local algorithm to get overlapping communities at all resolution levels in one run
	Frank Havemann, Michael Heinz, Alexander Struck, and Jochen Gläser
Coffee Breaks	**OSINT-WM 2010 Poster Session**
Panorama	
	Monitoring the Web Sentiment, the Italian Prime Minister's case
	Federico Neri, Paolo Geraci and Furio Camillo

Session	Applications of Social Networks	
10:30-12:30	Monday, August 9, 2010	Room: O-99
Chair:	Darko Obradović	

Title	A Social Network Analysis and Mining Methodology for the Monitoring of Specific Domains in the Blogosphere
Authors	Darko Obradović, Stephan Baumann and Andreas Dengel
Abstract	Whenever the question arises how a product, a personality, a technology or some other specific entity is perceived by the public, the blogosphere is a very good source of information. This is what usually interests business users from marketing or PR. Modern search services offer a rich set of tools to monitor or track the blogosphere as a whole, but the analysis with respect to a certain domain is very limited. In this paper we lay some foundations to aggregate blog articles of a specific domain from multiple search services, to analyse the social authorities of articles and blogs, and to monitor the attention articles of the domain receive over time. These are the building blocks required for a monitoring application that presents users the currently most interesting articles. This methodology can be instantiated and combined with additional textual analysis methods to create highly automated business intelligence applications.

Title	Learning from the Past: An Analysis of Person Name Corrections in DBLP Collection and Social Network Properties of Affected Entities
Authors	Florian Reitz and Oliver Hoffmann
Abstract	Identifying real world persons by their name is a significant problem, especially for digital libraries like DBLP. Though there are a large number of algorithmic approaches, finding and correcting name-related inconsistencies is timeconsuming and expensive. We introduce an extension to the DBLP collection which allows us to mine for modifications to name entities in a period of ten years. We use our findings to analyze how defective entities integrated into different dynamic social networks. Based on first results which showed that name errors are unevenly distributed in these networks we present and evaluate an approach to identify areas which are prone to name inconsistencies and require a more extensive monitoring.

Title	The Structure of the Computer Science Knowledge Network
Authors	Manh Cuong Pham and Ralf Klamma
Abstract	How is our knowledge organized? What research fields in computer science do exist? How are they interconnected? Previous work on knowledge mapping focused on building the map of all of sciences or a particular domain based on ISI published JCR (Journal Citation Report) dataset. Although this dataset covers most of important journals, it lacks of computer science conference and workshop proceedings. That results in an imprecise and incomplete analysis on the map of computer science knowledge. This paper presents an analysis on the computer science knowledge network with the aims to understand its structure and to answer the above questions. Based on the combination of two important digital libraries for computer science (DBLP and CiteSeerX), the knowledge networks are created at venue (journals, conferences and workshops) level and social network analysis is applied to determine clusters of similar venues, interdisciplinary venues and high prestige venues.

Session	Applications of Social Networks (Cont.)	
10:30-12:30	Monday, August 9, 2010	Room: O-99
Chair:	Darko Obradović	

Title	Business-oriented Analysis of a Social Network of University Students
Authors	Vincent Labatut and Jean-Michel Balasque
Abstract	Despites the great interest caused by social networks in Business Science, their analysis is rarely performed both in a global and systematic way in this field: most authors focus on parts of the studied network, or on a few nodes considered individually. This could be explained by the fact that practical extraction of social networks is a difficult and costly task, since the specific relational data it requires are often difficult to access and thereby expensive. One may ask if equivalent information could be extracted from less expensive individual data, i.e. data concerning single individuals instead of several ones. In this work, we try to tackle this problem through group detection. We gather both types of data from a population of students, and estimate groups separately using individual and relational data, leading to sets of clusters and communities, respectively. We found out there is no strong overlapping between them, meaning both types of data do not convey the same information in this specific context, and can therefore be considered as complementary. However, a link, even if weak, exists and appears when we identify the most discriminant attributes relatively to the communities. Implications in Business Science include community prediction using individual data.

Session	Social Network Analysis	
10:30-12:30	Monday, August 9, 2010	Room: O-95
Chair:	Jon Rokne	

Title	Product adoption networks and their growth in a large mobile phone network
Authors	Pål Roe Sundsøy, Johannes Bjelland, Geoffrey Canright, Kenth Engø-Monsen and Rich Ling
Abstract	To understand the diffusive spreading of a product in a telecom network, whether the product is a service, handset, or subscription, it can be very useful to study the structure of the underlying social network. By combining mobile traffic data and product adoption history from one of Telenor's markets, we can define and measure an adoption network—roughly, the social network of adopters. By studying the time evolution of adoption networks, we can observe how different products diffuses through the network, and measure potential social influence. This paper presents an empirical and comparative study of three adoption networks evolving over time in a large telecom network. We believe that the strongest spreading of adoption takes place in the dense core of the underlying network, and gives rise to a dominant largest connected component (LCC) in the adoption network, which we call "the social network monster". We believe that the size of the monster is a good indicator for whether or not a product is taking off. We show that the evolution of the LCC, and the size distribution of the other components, vary strongly with different products. The products studied in this article illustrate three distinct cases: that the social network monsters can grow or break down over time, or fail to occur at all. Some of the reasons a product takes off are intrinsic to the product; there are also aspects of the broader social context that can play in. Tentative explanations are offered for these phenomena. Also, we present two statistical tests which give an indication of the strength of the spreading over the social network. We find evidence that the spreading is dependent on the underlying social network, in particular for the early adopters.

Session	Social Network Analysis (Cont.)	
10:30-12:30	Monday, August 9, 2010	Room: O-95
Chair:	Jon Rokne	

Title	Labeling Communities using Structural Properties
Authors	Mohan Saravanan, Garigipati Prasad, Karishma Surana and Dew Suganthi
Abstract	Mobile Social Network Analysis is the mapping and measuring of interactions and flows between people, groups, and organizations based on the usage of their mobile communication services. Social Network Analysis and Mining has been highly influenced by the online social web sites, telecom consumer data and instant messaging systems, and has widely analyzed the presence of dense communities using graph theory and machine learning techniques. Community mining is one of the recent major directions in social network analysis. In this paper we find the communities in the network based on a modularity factor. Then we propose a graph theory based algorithm for further split of communities resulting in smaller sized and closely knit sub-units, to understand consumer behavior in a comprehensive manner. These sub-units are then analyzed and labeled based on their group behavior pattern. In this paper we measure and analyze the uniqueness of the structural properties for each small unit, it is another quick way to assign suitable labels for each distinct group. The effectiveness of the employed algorithms was evaluated on a huge telecom database in three different stages of our work.

Title	Online social network popularity evolution: an additive mixture model
Authors	Thomas Couronne, Alina Stoica and Jean-Samuel Beuscart
Abstract	Nowadays, users of online platforms can manage their own visibility and therefore popularity by mixing self-publishing activities and social networking. If one can develop strategies for building a reputation, his success is not determined only by his actions but also by the context in which he is involved. His popularity may evolve during time and this can be caused by multiple reasons. In this study we try to understand the reasons behind the evolution of MySpace artists' popularity. We use an additive mixture model in order to explain the variation of popularity between two snapshots of the same MySpace population. First we categorize the population into 5 clusters depending on their audience and authority in the first snapshot. Then we compute a model to assess the factors explaining the variation of popularity. We find that the evolution of the popularity, both in terms of audience and authority, is not explained by the same factors depending on the initial popularity.

Title	Community Aware Personalized Web Search
Authors	Omair Shafiq, Reda Alhajj and Jon G. Rokne
Abstract	Searching for the right information over the Web is not straight-forward. In the era of high speed internet, high capacity networks, and interactive Web applications, it has become even easier for the users to publish data online. A huge amount of data is published over the internet; every data is in the form of web pages, news, blogs and other material, etc. Similarly, for search engines like Google and Yahoo, it becomes rather hard to find out the right information, i.e., as per user's preferences; search results for same query differ in priority for different users. In this paper, we proposed a way to prioritize search results of search engines like Google, based on the personal interests and context of users. In order to find out personal interest and context, we follow a unique approach of (1) finding out activities of a user of his/her social-network, (2) finding out what information does the social networks (i.e., friends and community) provide to the user. Based on this information, we have developed a methodology that takes into account the information about social networks and prioritize search results from Web search engine.

Workshop on Mining Social Networks for Decision Support

10:30-12:30	Monday, August 9, 2010	Room: O-96
Chair:	I-Hsien Ting	

Title	Automatic Detection of Social Tag Spams Using a Text Mining Approach
Authors	Hsin-Chang Yang and Chung-Hong Lee
Abstract	Social tags are annotations for Web pages collaboratively added by users. It will be much easier to understand the meaning of Web pages and classify them according to their tags. The precision in retrieving Web pages may also increase using such tags. Nowadays social tags are mostly annotated manually by users via social bookmarking Web sites. Such manual annotation process may produce diverse, redundant, and inconsistent tags. Besides, many tags which are inconsistent with their annotated Web pages exist and deteriorate the feasibility of social tags. In this work we will develop an automatic scheme to discover the associations between Web pages and social tags and apply such associations on applications of social tag spam detection. We applied a text mining approach based on selforganizing maps to find the relationships between Web pages and social tags. The disadvantages of manual annotation will be remedied through such relationships. The discovered associations were then used to identify social tag spams. Preliminary experiments show that the quality and usability of social tags were improved through this method.

Title	Improving marketing response by data mining in social network
Authors	Jerzy Surma and Anna Furmanek
Abstract	Social networks have generated great expectations connected with their potential business value. The purpose of our research is to present that even a rudimentary application of data mining techniques can bring statistically significant improvement in marketing response accuracy throughout the virtual community. In our test the C&RT (classification and regression tree) approach was used to generate a classification tree that allows us to formulate some specific rules to identify the proper target group. In the performed empirical experiments, based on the real social network data, we showed that it is possible to improve marketing response. This promising result was obtained without any advanced and time consuming transformation of the available data.

Title	Identifying Themes in Social Media and Detecting Sentiments
Authors	Jayanta Kumar Pal and Abhisek Saha
Abstract	Recently, a huge wave of social media has generated significant impact in people's perceptions about technological domains. They are captured in several blogs/forums, where the themes relate to products of several companies. One of the companies can be interested to track them as resources for customer perceptions and detect user sentiments. The keywordbased approaches for identifying such themes fail to give satisfactory level of accuracy. Here, we address the above problems using statistical text-mining of blog entries. The crux of the analysis lies in mining quantitative information from textual entries. Once the relevant blog entries for the company/its competitors are filtered out, the theme identification is performed using a highly accurate novel technique termed as 'Best Separators Algorithm'. Logistic regression coupled with dimension reduction technique (singular value decomposition) is used to identify the tonality of those blogs. The final analysis shows significant improvement in terms of accuracy over popular approaches.

Workshop on Mining Social Networks for Decision Support (Cont.)

10:30-12:30	Monday, August 9, 2010	Room: O-96
Chair:	I-Hsien Ting	

Title	A Hierarchical Algorithm for Clustering Extremist Web Pages
Authors	Xingqin Qi, Kyle Christensen, Robert Duval, Edgar Fuller, Arian Spahiu, Qin Wu and Cun-Quan Zhang
Abstract	Extremist political movements have proliferated on the web in recent years due to the advent of minimal publication costs coupled with near universal access, resulting in what appears to be an abundance of groups that hover on the fringe of many socially divisive issues. Whether white-supremacist, neo-Nazi, anti-abortion, black separatist, radical Christian, animal rights, or violent environmentalists, all have found a home (and voice) on the Web. These groups form social networks whose ties are predicated primarily on shared political goals. Little is known about these groups, their interconnections, their animosities, and most importantly, their growth and development and studies such as the Dark Web Project, while considering domestic extremists, have focused primarily on international terrorist groups. Yet here in the US, there has been a complex social dynamic unfolding as well. While left-wing radicalism declined throughout the 80s and 90s, right wing hate groups began to flourish. Today, the web offers a place for any brand of extremism, but little is understood about their current growth and development. While there is much to gain from in-depth studies of the content provided by these sites, there is also a surprising amount of information contained in their online network structure as manifested in links between and among these web sites. Our research follows the idea that much can be known about you by the company you keep. In this paper, we propose an approach to measure the intrinsic relationships (i.e., similarities) of a set of extremist web pages. In this model, the web presence of a group is thought of as a node in a social network and the links between these pages are the ties between groups. This approach takes the bi-directional hyperlink structure of web pages and, based on similarity scores, applies an effective multi-membership clustering algorithm known as the quasi clique merger method to cluster these web pages using a derived hierarchical tree. The experimental results show that this new similarity measurement and hierarchical clustering algorithm gives an improvement over traditional link based clustering methods.

Title	A Dynamic and Task-Oriented Social Network Extraction System Based on Analyzing Personal Social Data
Authors	Kai-Yu Wang, I-Hsien Ting, Hui-Ju Wu and Pei-Shan Chang
Abstract	Large amount of social (communication) data have been generated in many applications for personal communication purpose. However, these data have not been used well currently. In this paper, we will introduce a methodology to collect and analyze those personal data, and by this for extracting social networks from the data. A system architecture will also be presented and implemented to show how the data can be collected, pre-processed, analyzed, which can also be used for personal decision support.

Session	Social Aspects I	
15:15-17:25	Monday, August 9, 2010	Room: O-99
Chair:	Hsin-Chang Yang	

Title	Empirical Study of Social Features' Roles in Buyers' Complex Decision Making
Authors	Li Chen
Abstract	This paper aims at studying the roles of social features (as obtained from social networking sources) in buyers' decision process when they are searching for products to buy. Through close observation of users' objective behavior, we have discovered the importance of different types of social features in supporting users to achieve a confident decision at the end. Improving suggestions are further derived on how to better present the social information and combine them with static product attributes to enhance current online decision supports.

Title	Detecting Social Positions using Simulation
Authors	Joel Brynielsson, Johanna Högberg, Lisa Kaati, Christian Mårtenson and Pontus Svenson
Abstract	Describing social positions and roles is an important topic within social network analysis. One approach is to compute a suitable equivalence relation on the nodes of the target network. One relation that is often used for this purpose is regular equivalence, or bisimulation, as it is known within the field of computer science. In this paper we consider a relation from computer science called simulation relation. Simulation creates a partial order on the set of actors in a network and we can use this order to identify actors that have characteristic properties. The simulation relation can also be used to compute simulation equivalence which is a less restrictive equivalence relation than regular equivalence but is still computable in polynomial time. This paper primarily considers weighted directed networks and we present definitions of both weighted simulation equivalence and weighted regular equivalence. Weighted networks can be used to model a number of network domains, including information flow, trust propagation, and communication channels. Many of these domains have applications within homeland security and in the military, where one wants to survey and elicit key roles within an organization. Identifying social positions can be difficult when the target organization lacks a formal structure or is partially hidden.

Title	What Can the Temporal Social Behavior Tell Us? An Estimation of Vertex-Betweenness Using Dynamic Social Information
Authors	Jing-Kai Lou, Shou-de Lin, Kuan-Ta Chen And Chin-Laung Lei
Abstract	The vertex-betweenness centrality index is an essential measurement for analyzing social networks, but the computation time is excessive. At present, the fastest algorithm, proposed by Brandes in 2001, requires O(jV jjEj) time, which is computationally intractable for real-world social networks that usually contain millions of nodes and edges. In this paper, we propose a fast and accurate algorithm for estimating vertex-betweenness centrality values for social networks. It only requires O(b2jV j) time, where b is the average degree in the network. Significantly, we demonstrate that the local dynamic information about the vertices is highly relevant to the global betweenness values. The experiment results show that the vertex-betweenness values estimated by the proposed model are close to the real values and their rank is fairly accurate. Furthermore, using data from online role-playing games, we present a new type of dynamic social network constructed from in-game chatting activity. Besides using such online game networks to evaluate our betweenness estimation model, we report several interesting findings derived from conducting static and dynamic social network analysis on game networks.

Session	Social Aspects I (Cont.)	
15:15-17:25	Monday, August 9, 2010	Room: O-99
Chair:	Hsin-Chang Yang	

Title	Opinion Detection in Blogs: What is still Missing?
Authors	Malik Muhammad Saad Missen, Mohand Boughanem and Guillaume Cabanac
Abstract	In recent years, a lot of work has been done in the field of Opinion Detection in blogs but most of the research is based on machine learning or lexical based approaches. The objective of this paper is to focus on Social Network based evidences that can be exploited for the task of Opinion Detection. We propose a framework that makes use of the major elements of the blogosphere for extracting opinions from blogs. Besides this, we highlight the tasks of opinion prediction and multidimensional ranking. In addition, we also discuss the challenges that researchers might face while realizing the proposed framework. At the end, we demonstrate the importance of social networking evidences by performing experimentation.

Title	Analyzing the Blogosphere for Predicting the Success of Music and Movie Products
Authors	Fabian Abel, Ernesto Diaz-Aviles, Nicola Henze, Daniel Krause and Patrick Siehndel
Abstract	Over the last decade blogs became an important part of the Web, where people can announce anything that is on their mind. Due to their high popularity blogs have great potential to mine public opinions regarding products. Such knowledge is very valuable as it could be used to adjust marketing campaigns or advertisement of products accordingly. In this paper we investigate how the blogosphere can be used to predict the success of products in the domain of music and movies. We analyze and characterize the blogging behavior in both domains particularly around product releases, propose different methods for extracting characteristic features from the blogosphere, and show that our predictions correspond to the real world measures Sales Rank and box office revenue respectively.

Session	Algorithms for Social Networks I	
15:15-17:25	Monday, August 9, 2010	Room: O-95
Chair:	Vladimir Bartik	

Title	Incremental Detection of Local Community Structure
Authors	L. Karl Branting
Abstract	Incremental methods for detecting community structure are necessary when a graph's size or node-expansion cost makes global community-detection methods infeasible. Previous approaches to local community detection, which conflate edges between vertices in the immediate neighborhood of a partially known community with edges to more distant vertices, often select vertices in an order that is suboptimal with respect to the actual community structure. This paper describes two new algorithms—MaxActivation and MaxDensity—whose vertex selection policies focus on edges among the vertices in the partially-known community and its immediate neighborhood, ignoring edges to more distant vertices. In an empirical evaluation on a collection of natural and artificial graphs of varying degrees of community cohesion, the relative performance of alternative algorithms depended upon the degree distribution of each graph. These results demonstrate that the selection of an algorithm for incremental community detection should be guided by the characteristics of the graph to which it will be applied.

Session	Algorithms for Social Networks I (Cont.)	
15:15-17:25	Monday, August 9, 2010	Room: O-95
Chair:	Vladimir Bartik	

Title	Application of Genetic Algorithms to the Identification of Website Link Structure
Authors	Rocío Martínez Torres, Beatriz Palacios Florencio, Sergio Toral Marín and Federico Barrero García
Abstract	This paper explores website link structure considering websites as interconnected graphs and analyzing their features as a social network. Factor Analysis provides the statistical methodology to adequately extract the main website profiles in terms of their internal structure. However, due to the large number of indicators, a genetic search of their optimum number is proposed, and applied to a case study based on 80 Spanish University websites. Results provide coherent and relevant website profiles, and highlight the possibilities of Genetic Algorithms as a tool for discovering new knowledge related to website link structures.

Title	Iterative Annotation of Multi-relational Social Networks
Authors	Stéphane Peters, Ludovic Denoyer and Patrick Gallinari
Abstract	We consider here the task of multi-label classification for data organized in a multi-relational graph. We propose the IMMCA model - Iterative Multi-label Multi-Relational Classification Algorithm - a general algorithm for solving the inference and learning problems for this task. Inference is performed iteratively by propagating scores according to the multi-relational structure of the data. We detail two instances of this general model, implementing two different label propagation schemes on the multi-graph. This is the first collective classification method able to handle multiple relations and to perform multi-label classification in multi-graphs. The target application is image annotation in large social media sharing web sites (Flickr). The goal is to assign labels for images when users and images are connected through multiple relations - authorship, friendship, or visual/textual similarities. We show that our model is able to deal with both content and social relations and performs well on real datasets. Additional experiments on artificial data allow us analyzing the behavior of our method in different situations.

Title	Efficient Extraction of High-Betweenness Vertices
Authors	Wen Haw Chong, Wei Shan Belinda Toh and Loo Nin Teow
Abstract	Centrality measures are crucial in quantifying the roles and positions of vertices in networks. An important measure is betweenness, which is based on the number of shortest paths that vertices fall on. However, betweenness is computationally expensive to derive, resulting in much research on efficient techniques. We note that in many applications, the key interest is on the high-betweenness vertices and that their betweenness rankings are usually adequate for analysts to work with. Hence, we have developed a novel algorithm that efficiently returns the set of vertices with highest betweenness. The algorithm‘s convergence criterion is based on the membership stability of the high-betweenness set. Through experiments on various artificial and real world networks, the algorithm is shown to be both efficient and accurate.

Session	Algorithms for Social Networks I (Cont.)	
15:15-17:25	Monday, August 9, 2010	Room: O-95
Chair:	Vladimir Bartik	

Title	Detecting Communities in Massive Networks based on Local Community Attractive Force Optimization
Authors	Qi Ye, Bin Wu, Yuan Gao and Bai Wang
Abstract	Currently, community detection has led to a huge interest in data analysis on real-world networks. However, the high computationally demanding of most community detection algorithms limits their applications. In this paper, we propose a heuristic algorithm to extract the community structure in large networks based on local community attractive force optimization whose time complexity is near linear and space complexity is linear. The effectiveness of our algorithm is demonstrated by extensive experiments on lots of computer generated graphs and public available real-world graphs. The result shows our algorithm is extremely fast, and it is easy for us to explore massive networks interactively.

Session	Detecting Various Aspects in Social Networks	
15:15-17:25	Monday, August 9, 2010	Room: O-96
Chair:	John Yearwood	

Title	Profiling Phishing Emails Based on Hyperlink Information
Authors	John Yearwood, Musa Mammadov and Arunava Banerjee
Abstract	In this paper, a novel method for profiling phishing activity from an analysis of phishing emails is proposed. Profiling is useful in determining the activity of an individual or a particular group of phishers. Work in the area of phishing is usually aimed at detection of phishing emails. In this paper, we concentrate on profiling as distinct from detection of phishing emails. We formulate the profiling problem as a multi-label classification problem using the hyperlinks in the phishing emails as features and structural properties of emails along with whois (i.e.DNS) information on hyperlinks as profile classes. Further, we generate profiles based on classifier predictions. Thus, classes become elements of profiles. We employ a boosting algorithm (AdaBoost) as well as SVM to generate multi-label class predictions on three different datasets created from hyperlink information in phishing emails. These predictions are further utilized to generate complete profiles of these emails. Results show that profiling can be done with quite high accuracy using hyperlink information.

Title	Assessing Expertise Awareness in Resolution Networks
Authors	Yi Chen, Shu Tao, Xifeng Yan, Nikos Anerousis, Qihong Shao
Abstract	Problem resolution is a key issue in the IT service industry. A large service provider handles, on daily basis, thousands of tickets that report various types of problems from its customers. The efficiency of this process highly depends on the effective interactions among various expert groups, in search of the resolver to the reported problem. In fact, ticket transfer decisions reflect the expertise awareness between groups, thus encoding a sophisticated resolution social network. In this paper, we propose a computational framework to quantitatively assess expertise awareness, i.e., how well a group knows the expertise of others. An accurate assessment of expertise awareness could identify the weakest components in a resolution system. The framework, built on our previously developed resolution engine, is able to calculate the performance difference caused by excluding a node from the network. The difference exposes the awareness of this node to other nodes in the network. To our best knowledge, this is the first study on this problem from a computational perspective. We tested the proposed framework on a large set of real-world problem tickets and validated our discovery by carefully analyzing the tickets that are incorrectly transferred. Experimental results show that our framework can successfully capture groups that do not know others' expertise very well.

Session	Detecting Various Aspects in Social Networks (Cont.)	
15:15-17:25	Monday, August 9, 2010	Room: O-96
Chair:	John Yearwood	

Title	Faving Reciprocity in Content Sharing Communities: A comparative analysis of Flickr and Twitter
Authors	Jong Gun Lee, Panayotis Antoniadis and Kavé Salamatian
Abstract	In the Web 2.0 era, users share and discover interesting content via a network of relationships created in various social networking or content sharing sites. They can become for example contacts, followers or friends and express their appreciation of specific content uploaded by their peers by faving, retweeting or liking them depending on whether they are in Flickr, Twitter or Facebook respectively. Then they can discover additional content of interest through the lists of favorites of their contacts and so on. This faving (or favoring) functionality becomes thus a central part of content sharing communities for two purposes: (a) it helps the propagation of content amongst users and (b) it stimulates users' participation and activity. In this paper, we make a first step to understand users' faving behavior in content sharing communities in terms of reciprocity using publicly available datasets from Flickr and Twitter. Do users favor content only when they really appreciate it or they often feel the need to reciprocate when their content is appreciated by one of their contacts or even by a stranger? Do people take advantage of this process to gain popularity? What is the impact of the design, the social software, of a specific community and the type of content shared? These are some of the questions that our first results help to answer.

Title	Identifying Networks of Semantically-Similar Individuals from Public Discussion Forums
Authors	James A. Danowski
Abstract	In identifying communities in the online environment most approaches consider as the basic tie that connects social actors together some form of direct contact, such as through communication. Other approaches use surrogates for direct ties including copresense, cooccurrence, or structural equivalence. In contrast, this paper focuses on semantic equivalence among social actors, regardless of their direct contact. In particular, to index semantic similarity, it measures the entire semantic network across the body of messages an individual produces and compares that network to another person's to index how similar they are. Then it uses this similarity coefficient as the social network tie for networkanalysis to identify communities of semantic practice. Semantic similarity has some unique value for theory and practice in automated social network analysis. To illustrate this approach, this research extracted all 10,001 posts from a public discussion forum authored by 3,272 individuals and represented each author's semantic network based on cooccurrences of all word pairs within three word positions. Pearson correlation coefficients were computed for 5.36 million pairs of individuals using Quadratic Assignment Procedures (QAP). Authors sharing approximately 50% of their semantic networks numbered 22. Subsequent network analysis found that they constituted a single group in terms of a community of linguistic practice. A different forum was analyzed as a contrast. Applications of such a procedure can test hypotheses about semantic network similarity in relation to variations in communication frequency and modality More practical purposes would include finding persons of interest to add to a watch list.

Session	Detecting Various Aspects in Social Networks (Cont.)	
15:15-17:25	Monday, August 9, 2010	Room: O-96
Chair:	John Yearwood	

Title	The Effect of Network Realism on Community Detection Algorithms
Authors	Günce K. Orman and Vincent Labatut
Abstract	Community detection consists in searching cohesive subgroups in complex networks. It has recently become one of the domain pivotal questions for scientists in many different fields where networks are used as modeling tools. Algorithms performing community detection are usually tested on real, but also on artificial networks, the former being costly and difficult to obtain. In this context, being able to generate networks with realistic properties is crucial for the reliability of the tests. Recently, Lancichinetti et al. [1] designed a method to produce realistic networks, with a community structure and power law distributed degrees and community sizes. However, other realistic properties such as degree correlation and transitivity are missing. In this work, we propose a modification of their approach, based on the preferential attachment model, in order to remedy this limitation. We analyze the properties of the generated networks and compare them to the original approach. We then apply different community detection algorithms and observe significant changes in their performances when compared to results on networks generated with the original approach.

Open Source INTelligence and Web Mining 2010 Symposium		
11:30-12:45	Tuesday, August 10, 2010	Room: O-99
Chair:	Gerhard Wagner and Arno Reuser	

Title	A Global Measure for Estimating the Degree of Organization of Terrorist Networks
Authors	Khaled Dawoud, Reda Alhajj and Jon Rokne
Abstract	The motivation for the study described in this paper is realizing the fact that organizational structure of a group is a key indicator in determining its strengths and weaknesses. A general knowledge of the prevalent models of terrorist organizations leads to a better understanding of their capabilities. Knowledge of the different labels and systems of classification that have been applied to groups and individuals aid us in discarding useless or irrelevant terms, and in understanding the purposes and usefulness of different terminologies. Previous studies in network analysis have mostly dealt with legal networks with transparent structures. Terrorist networks share some features with conventional (real world) networks, but they are harder to identify because they mostly hide their illicit activities. In this paper we describe a novel approach for extracting structural patterns of terrorist networks with the help of social network analysis measures and techniques. We propose a global measure for estimating the degree of organization of social networks; the measure is global in terms of being applied to the whole network as an entity and being extracted from the major well-known SNA measures. The importance of such research comes from the fact that individuals in organized intellectual networks and especially terrorist networks tend to hide their individual rules and thus there is a need to deal with such networks as a whole, discovering the degree of organization and thus its strengths and weaknesses.

Open Source INTelligence and Web Mining 2010 Symposium

11:30-12:45	Tuesday, August 10, 2010	Room: O-99
Chair:	Gerhard Wagner and Arno Reuser	

Title	Detecting New Trends in Terrorist Networks
Authors	Uffe Kock Wiil, Nasrullah Memon and Panagiotis Karampelas
Abstract	This paper discusses new trends in terrorist networks. We investigate a new case study regarding the recent Denmark terror plan and present analysis of the thwarted plot. Analyzing covert networks after an incident is practically easy for trial purposes. Mapping clandestine networks to thwarted terrorist activities is much more complicated. The network surrounding the recent Denmark terror plan is studied through publicly available information. We are able to map a piece of the network centered on David Headley, who recently confessed to have planned a terrorist attack to take place on Danish soil. The map gives us an insight into the organizations and people involved.

Title	Text-Based Web Page Classification with Use of Visual Information
Authors	Vladimír Bartík
Abstract	As the number of pages on the web is permanently increasing, there is a need to classify pages into categories to facilitate indexing or searching them. In the method proposed here, we use both textual and visual information to find a suitable representation of web page content. In this paper, several term weights, based on TF or TF-IDF weighting are proposed. Modification is based on visual areas, in which the text appears and their visual properties. Some results of experiments are included in the final part of the paper.

Title	A Case Study of Open Source and Public Participation in Catalyzing Social Innovations
Authors	Helen K. Liu and Jodi Sandfort
Abstract	Our study investigates the use of a new open source platform in catalyzing social innovations and participation of its members over time. We empirically examined how the nature of project designs and social pressure affect contribution to the open source platform. In the twenty-one projects (3,998 contributions) from 2004 to 2009, we find that the average number of contributions is higher when the projects are highly visible, when the project is designed to require specific skills from participants, and when it requires outcome measurement from participants' proposals. Also, we verified that actors join collective action when they believe their contribution is meaningful and they would stop when they believe their contribution could be marginal. These results provide implications for open source platform design in the philanthropic sector.

Session	Social Aspects II	
11:30-12:45	Tuesday, August 10, 2010	Room: O-95
Chair:	Sofus A. MacKassy	

Title	Leveraging contextual information to explore posting and linking behaviors of bloggers
Authors	Sofus A. Macskassy
Abstract	The last decade has seen an explosion in blogging and the blogosphere is continuing to grow, having a large global reach and many vibrant communities. Researchers have been pouring over blog data with the goal of finding communities, tracking what people are saying, finding influencers, and using many social network analytic tools to analyze the underlying social networks embedded within the blogosphere. One of the key technical problems with analyzing large social networks such as those embedded in the blogosphere is that there are many links between individuals and we often do not know the context or meaning of those links. This is problematic because it makes it difficult if not impossible to tease out the true communities, their behavior, how information flows, and who the central players are (if any). This paper seeks to further our understanding of how to analyze large blog networks and what they can tell us. We analyze 1.24M blogs posted by 298K bloggers over a period of three weeks. These bloggers span private blog sites through large blog-sites such as livejournal and blogspot. We first characterize the behavior of bloggers, validating some (but not all) common beliefs about how often bloggers post, how long their posts are, who they link to and how much reciprocity there is in links. We then take a look at bloggers from the larger blog sites to understand whether and how they differ in terms of these metrics. Finally, we extend our analysis to focus on contextual links: what is the textual content of the blog which had a link. We identify topics from the textual content of all the blog posts and use these to tag links based on the topics that were discussed in the blog.

Title	White's Three Disciplines and Relative Valuation Order: Countering the social ignorance of automated data collection and analysis
Authors	Steven McDermott
Abstract	This paper asks which of White's (2009) three disciplines and relative valuation orders does the Singapore blogosphere adhere to. Analysing not just the hyperlink connections but the textual discourse; and in doing so attempts to highlight certain limitations of using automated data mining and analysis software. Using the Singapore blogosphere, described by Lin, Sundaram, Chi, Tatemura, and Tseng, (2006) and Hurst (2006), as an isolated and distinct network with no theme or focus, I have targeted blogs using social network analysis uncovering the key players, with higher levels of 'betweenness centrality' (de Nooy & Mrvar et al., 2005) and the themes and discipline of the Singapore blogosphere. This case study will help highlight the analytic framework, benefits and limitations of using social network analysis and an ethnographical approach to networks. This paper also highlights the use of various software technology; blogs, IssueCrawler, HTTrack, NetDraw, and Leximancer while using an ethnographic approach to counter the social ignorance of automated electronic software.

Session	Social Aspects II (Cont.)	
11:30-12:45	Tuesday, August 10, 2010	Room: O-95
Chair:	Sofus A. MacKassy	

Title	Detecting Leaders in Behavioral Networks
Authors	Ilham Esslimani, Armelle Brun, Anne Boyer
Abstract	The development of the Web engendered the emergence of virtual communities. Analyzing information flows and discovering leaders through these communities becomes thus, a major challenge in different application areas. In this paper, we present an algorithm that aims at detecting leaders in the context of behavioral networks. This algorithm considers the high connectivity and the potentiality of propagating accurate appreciations so as to detect reliable leaders through these networks. This approach is evaluated in terms of precision using a real usage dataset. The results of the experimentation show the interest of our approach to detect TopN behavioral leaders that predict accurately the preferences of the other users. Besides, our approach can be harnessed in different application areas caring about the role of leaders.

Session	Models for Social Networks I	
11:30-12:45	Tuesday, August 10, 2010	Room: O-96
Chair:	Mikołaj Morzy	

Title	Tracking the Evolution of Communities in Dynamic Social Networks
Authors	Derek Greene, Dónal Doyle and Pádraig Cunningham
Abstract	Real-world social networks from a variety of domains can naturally be modelled as dynamic graphs. However, approaches to detecting communities have largely focused on identifying communities in static graphs. Recently, researchers have begun to consider the problem of tracking the evolution of groups of users in dynamic scenarios. Here we describe a model for tracking the progress of communities over time in a dynamic network, where each community is characterised by a series of significant evolutionary events. This model is used to motivate a community-matching strategy for efficiently identifying and tracking dynamic communities. Evaluations on synthetic graphs containing embedded events demonstrate that this strategy can successfully track communities over time in volatile networks. In addition, we describe experiments exploring the dynamic communities detected in a real mobile operator network containing millions of users.

Title	Rhythm and Randomness in Human Contact
Authors	Mervyn P. Freeman, Nicholas W. Watkins, Eiko Yoneki, and Jon Crowcroft
Abstract	There is a substantial interest in the effect of human mobility patterns on opportunistic communications. Inspired by recent work revisiting some of the early evidence for a Levy flight foraging strategy in animals, we analyse datasets on human contact from real world traces. By analysing the distribution of inter-contact times on different time scales and using different graphical forms, we find not only the highly skewed distributions of waiting times highlighted in previous studies but also clear circadian rhythm. The relative visibility of these two components depends strongly on which graphical form is adopted and the range of times scales. We use a simple model to reconstruct the observed behaviour and discuss the implications of this for forwarding efficiency.

Session	Models for Social Networks I (Cont.)	
11:30-12:45	Tuesday, August 10, 2010	Room: O-96
Chair:	Mikołaj Morzy	

Title	An Analysis of Communities in Different Types of Online Forums
Authors	Mikołaj Morzy
Abstract	The most important feature of Internet forums is their social aspect. Many forums are active for a long period of time and attract a group of dedicated users, who build a tight social community around a forum. With great abundance of forums devoted to every possible aspect of human activity, such as politics, religion, sports, technology, entertainment, economy, fashion, and many more, users are able to find a forum that perfectly suits their needs and interests. In this paper we introduce a micro-community-based model for descriptive characterization of Internet forums. We show how a simple concept of a microcommunity can be used to quantitatively assess the openness and durability of an Internet forum. We also show that our model is capable of producing a taxonomy of Internet forums using unsupervised clustering method. We present the microcommunity model, the set of basic statistics, and we apply the model to several real-world online forums to experimentally verify the correctness and robustness of the model.

Session	Clustering, Data Mining & Identification	
10:30-12:30	Wednesday, August 11, 2010	Room: O-99
Chair:	James A. Danowski	

Title	A Multiobjective and Evolutionary Clustering Method for Dynamic Networks
Authors	Francesco Folino and Clara Pizzuti
Abstract	The discovery of evolving communities in dynamic networks is an important research topic that poses challenging tasks. Previous evolutionary based clustering methods try to maximize cluster accuracy, with respect to incoming data of the current time step, and minimize clustering drift from one time step to the successive one. In order to optimize both these two competing objectives, an input parameter that controls the preference degree of a user towards either the snapshot quality or the temporal quality is needed. In this paper the detection of communities with temporal smoothness is formulated as a multiobjective problem and a method based on genetic algorithms is proposed. The main advantage of the algorithm is that it automatically provides a solution representing the best tradeoff between the accuracy of the clustering obtained, and the deviation from one time step to the successive. Experiments on synthetic data sets show the very good performance of the method compared to state-of-the-art approaches.

Title	Overlapping Community Detection by Collective Friendship Group Inference
Authors	Bradley S. Rees and Keith B. Gallagher
Abstract	There has been considerable interest in improving the capability to identify communities within large collections of social networking data. However, many of the existing algorithms will compartment an actor (node) into a single group, ignoring the fact that in real-world situations people tend to belong concurrently to multiple groups. Our work focuses on the ability to find overlapping communities by aggregating the community perspectives of friendship groups, derived from egonets. We will demonstrate that our algorithm not only finds overlapping communities, but additionally helps identify key members, which bind communities together. Additionally, we will highlight the parallel feature of the algorithm as a means of improving runtime performance.

Session	Clustering, Data Mining & Identification (Cont.)	
10:30-12:30	Wednesday, August 11, 2010	Room: O-99
Chair:	James A. Danowski	

Title	Clustering Social Networks Using Distance-preserving Subgraphs
Authors	Ronald Nussbaum, Abdol-Hossein Esfahanian, and Pang-Ning Tan
Abstract	Cluster analysis describes the division of a dataset into subsets of related objects, which are usually disjoint. There is considerable variety among the different types of clustering algorithms. Some of these clustering algorithms represent the dataset as a graph, and use graph-based properties to generate the clusters. However, many graph properties have not been explored as the basis for a clustering algorithm. In graph theory, a subgraph of a graph is distance-preserving if the distances (lengths of shortest paths) between every pair of vertices in the subgraph are the same as the corresponding distances in the original graph. In this paper, we consider the question of finding proper distance-preserving subgraphs, and the problem of partitioning a simple graph into an arbitrary number of distance-preserving subgraphs for clustering purposes. We also present a clustering algorithm called DP-Cluster, based on the notion of distance-preserving subgraphs. One area of research that makes considerable use of graph theory is the analysis of social networks. For this reason we evaluate the performance of DP-Cluster on two real-world social network datasets.

Title	Web Clustering Using Social Bookmarking Data with Dimension Reduction Regarding Similarity
Authors	Hidekazu Yanagimoto, Michifumi Yoshioka and Sigeru Omatu
Abstract	We propose a web clustering method using social bookmarking data with dimension reduction regarding similarity. In a social bookmarking service registered web pages are shared among many users via the Internet. A user evaluates web pages according to his/her interests and decides whether they are registered or not. If a user is interested in web pages another user registered, he/she registers them in his/her social bookmark again. Web page registration is regarded as web page selection according to users' interests. Hence, we can realize web page clustering using social bookmarking data. To realize this idea we construct the similarity matrix between web pages based on their cooccurrence frequency. Since the similarity matrix includes various kind of noise, we map the similarity matrix onto lower dimension feature space to reduce the noise. Especially we carry out dimension reduction regarding web pages' similarity. This approach uses generalized eigenvectors and is different from usual eigenvalue problems. We describe a dimension reduction method and carry out some evaluation experiments. Using artificially generated data, we explain that the feature space constructed with our proposed method emphasizes the essential relationship between web pages. And using real social bookmarking data, we describe our proposed method can make good clusters.

Session	Clustering, Data Mining & Identification (Cont.)	
10:30-12:30	Wednesday, August 11, 2010	Room: O-99
Chair:	James A. Danowski	

Title	Key player identification: a note on weighted connectivity games and the Shapley value
Authors	Roy Lindelauf and Iris Blankers
Abstract	The use of graph theory in social network analysis to identify the most important actors is well-known. More recently game theory has also been applied to measure centrality as variation in the power due to the social structure. Here we present such a solution concept from cooperative game theory, the Shapley value, to identify key players engaged in a network. The communication structure among the players is modeled by use of the so-called connectivity game. We analyze standard networks representative of covert organizations and present results on the centrality of players organized according to an a-symmetric path structure. In addition we present an analysis of a weighted connectivity game in which the worth of coalitions not only depends on their interaction structure but also on exogenous factors.

Title	Dynamic Features of Social Tagging Vocabulary: Delicious, Flickr and YouTube
Authors	Daifeng Li, Ying Ding, Zheng Qin, Staša Milojević, Bing He, Erjia Yan and Tianxi Dong
Abstract	This article investigates the dynamic features of social tagging vocabularies in Delicious, Flickr and YouTube from 2003 to 2008. It analyzes the evolution of the usage of the most popular tags in each of these three social networks. We find that for different tagging systems, the dynamic features reflect different cognitive processes. At the macro level, the tag growth obeys power-law distribution for all three tagging systems with exponents lower than one. At the micro level, the tag growth of popular resources in all three tagging systems follows a similar power-law distribution. Moreover, we find that the exponents of tag growth varied in different evolving stages of popular individual resources.

Session	Privacy and Security	
10:30-12:30	Wednesday, August 11, 2010	Room: O-95
Chair:	Leon S. L. Wang	

Title	A Framework for Improved Adolescent and Child Safety in MMOs
Authors	Lyta Penna, Andrew Clark and George Mohay
Abstract	This paper presents an approach to providing better safety for adolescents playing online games. We highlight an emerging paedophile presence in online games and offer a general framework for the design of monitoring and alerting tools. Our method is to monitor and detect relationships forming with a child in online games, and alert if the relationship indicates an offline meeting with the child has been arranged or has the potential to occur. A prototype implementation with demonstrative components of the framework has been created and is introduced. The prototype demonstration and evaluation uses a teen rated online relationship-building environment for its case study, specifically the predominant Massive Multiplayer Online Game (MMO) World of Warcraft.

Session	Privacy and Security (Cont.)	
10:30-12:30	Wednesday, August 11, 2010	Room: O-95
Chair:	Leon S. L. Wang	

Title	Measuring Link Importance in Terrorist Networks
Authors	Uffe Kock Wiil, Jolanta Gniadek and Nasrullah Memon
Abstract	A terrorist network is a special kind of social network with emphasis on both secrecy and efficiency. Such networks are intentionally structured to ensure efficient communication between members without being detected. A terrorist network can be modeled as a generalized network (graph) consisting of nodes and links. Techniques from social network analysis and graph theory can be used to identify key entities in the network, which is helpful for network destabilization purposes. Research on terrorist network analysis has mainly focuses on analysis of nodes, which is in contrast to the fact that the links between the nodes provide at least as much relevant information about the network as the nodes themselves. This paper presents a novel method to analyze the importance of links in terrorist networks inspired by research on transportation networks. The link importance measure is implemented in CrimeFighter Assistant and evaluated on known terrorist networks.

Title	Optimizing Multiple Centrality Computations for Reputation Systems
Authors	Christian von der Weth, Klemens Böhm and Christian Hütter
Abstract	In open environments, deciding if an individual is trustworthy, based on his past behavior, is fundamentally important. To accomplish this, centrality in a so-called feedback graph is often used as a trust measure. The nodes of this graph represent the individuals, and an edge represents feedback that evaluates a past interaction. In the open environments envisioned where individuals can specify for themselves of how to derive their trust in others, we observe that several centrality computations take place at the same time. With centrality computation being an expensive operation, performance is an important issue. While techniques for the optimization of a single centrality computation exist, little attention so far has gone into the computation of several centrality measures in combination. In this paper, we investigate how to compute several centrality measures at the same time efficiently. We propose two new optimization techniques and demonstrate their usefulness experimentally both on synthetic and on real-world data sets.

Title	New Approach to Manage Security Against Neigborhood Attacks in Social Networks
Authors	B. K. Tripathy and Gouri Kumar Panda
Abstract	Now a days, more and more of social network data are being published in one way or other. So, preserving privacy in publishing social network data has become an important concern. With some local knowledge about individuals in a social network, an adversary may attack the privacy of some victims easily. Most of the work done so far towards privacy preservation can deal with relational data only. However, Bin Zhou and Jian Pei [11] proposed a scheme for anonymization of social networks, which is an initiative in this direction and provides a partial solution to this problem. In fact, their algorithm cannot handle the situations in which an adversary has knowledge about vertices in the second or higher hops of a vertex, in addition to its immediate neighbors. In this paper, we propose a modification to their algorithm for the network anonymization which can handle such situations. In doing so, we use an algorithm for graph isomorphism based on adjacency matrix instead of their approach using DFS technique [11]. More importantly, the time complexity of our algorithm is less than that of Zhou and Pei.

Session	Privacy and Security (Cont.)	
10:30-12:30	Wednesday, August 11, 2010	Room: O-95
Chair:	Leon S. L. Wang	

Title	Virus Propagation Modeling in Facebook
Authors	Wei Fan and Kai Hau Yeung
Abstract	Online social network services have attracted more and more users in recent years. So the security in social networks becomes a critical problem. In this paper, we propose a virus model based on the application network of Facebook, which is the most popular among these social network service providers. We also model the virus propagation with an email virus model and compare the behaviors of virus spreading in Facebook and email network. We find that while Facebook provides a platform for application developers, it also provides the same chance for virus spreading. And virus will spread faster in Facebook network if users of Facebook spend more time on it for entertainment.

Session	Algorithms for Social Networks II	
10:30-12:30	Wednesday, August 11, 2010	Room: O-96
Chair:	Petteri Hintsanen	

Title	Fast Discovery of Reliable Subnetworks
Authors	Petteri Hintsanen, Hannu Toivonen and Petteri Sevon
Abstract	We present a novel and efficient algorithm, PATH COVERING, for solving the most reliable subgraph problem. A reliable subgraph gives a concise summary of the connectivity between two given individuals in a social network. Formally, the given network is seen as a Bernoulli random graph G, and the objective is to find a subgraph H $\subset$ G with at most B edges such that the probability that a path exists in H between the given two individuals is maximized. The algorithm is based on an efficient stochastic search of candidate paths, and the use of Monte-Carlo simulation to cast the problem as a set cover problem. Experimental evaluation on real graphs derived from DBLP bibliography database indicates superior performance of the proposed algorithm.

Title	Detecting highly overlapping communities with Model-based Overlapping Seed Expansion
Authors	Aaron McDaid and Neil Hurley
Abstract	A research into community finding in social networks progresses, there is a need for algorithms capable of detecting overlapping community structure. Many algorithms have been proposed in recent years that are capable of assigning each node to more than a single community. The performance of these algorithms tends to degrade when the ground-truth contains a more highly overlapping community structure, with nodes assigned to more than two communities. Such highly overlapping structure is likely to exist in many social networks, such as Facebook friendship networks. In this paper we present a scalable algorithm, MOSES, based on statistical model of community structure, which is capable of detecting highly overlapping community structure, especially when there is variance in the number of communities each node is in. In evaluation on synthetic data MOSES is found to be superior to existing algorithms, especially a high level of overlap. We demonstrate MOSES on real social network data by analyzing the networks of friendship links between students of five US universities.

Session	Algorithms for Social Networks II (Cont.)	
10:30-12:30	Wednesday, August 11, 2010	Room: O-96
Chair:	Petteri Hintsanen	

Title	Quest: An Adaptive Framework for User Profile Acquisition from Social Communities of Interest
Authors	Nima Dokoohaki and Mihhail Matskin
Abstract	Within this paper we introduce a framework for semi- to full-automatic discovery and acquisition of bag-of-words style interest profiles from openly accessible Social Web communities. To do such, we construct a semantic taxonomy search tree from target domain (domain towards which we're acquiring profiles for), starting with generic concepts at root down to specific-level instances at leaves, then we utilize one of proposed Quest methods, namely Depth-based, N-Split and Greedy to read the concept labels from the tree and crawl the source Social Network for profiles containing corresponding topics. Cached profiles are then mined in a two-step approach, using a clusterer and a classifier to generate predictive model presenting weighted profiles, which are used later on by a semantic recommender to suggest and recommend the community members with the items of their similar interest.

Title	Information propagation analysis in a social network site
Authors	Matteo Magnani, Danilo Montesi and Luca Rossi
Abstract	One of the most interesting and still not completely understood phenomena happening in Social Network Sites is their ability to spread (or not) units of information which may aggregate to form large distributed conversations. In this paper we present the result of an empirical study on a Large Social Database (LSD) aimed at measuring the factors enabling information spreading in Social Network Sites.

Session	Representation, Visualization, and Interaction	
13:45-15:30	Wednesday, August 11, 2010	Room: O-99
Chair:	Federico Neri	

Title	Pixel-Oriented Visualization of Change in Social Networks
Authors	Klaus Stein, René Wegener and Christoph Schlieder
Abstract	We propose a new approach to visualize social networks. Most common network visualizations rely on graph drawing. While without doubt useful, graphs suffer from limitations like cluttering and important patterns may not be realized especially when networks change over time. Our approach adapts pixel-oriented visualization techniques to social networks as an addition to traditional graph visualizations. The visualization is exemplified using social networks based on corporate wikis.

Session	Representation, Visualization, and Interaction (Cont.)	
13:45-15:30	Wednesday, August 11, 2010	Room: O-99
Chair:	Federico Neri	

Title	Using Vector Clocks to Visualize Communication Flow
Authors	Martin Harrigan
Abstract	Given a dataset comprising a temporal sequence of communications between actors, how can we visualize the 'flow' of communication over time? Current practice transforms the dataset into a dynamic graph – vertices represent the actors and directed edges represent the communications. The directed edges are added and removed over time. There are then several approaches to visualizing dynamic graphs that optimize aesthetic criteria, most producing animated node-link diagrams. However, dynamic graphs are not the only way to model this problem. One alternative from the field of distributed computing is vector clocks. Recent work employed vector clocks to analyze communication flow in social networks with much effect, arguing that they provide new insights into the problem. In this paper, we use vector clocks as a basis for visualizing communication flow. We show that communication patterns, e.g., random, partitioned and core-periphery, are easily discernible in the resulting visualizations.We also argue that, in the cases where vector clocks are used to analyze communication flow, it is most natural to base the accompanying visualizations on vector clocks also.

Title	COSI: Cloud Oriented Subgraph Identification in Massive Social Networks
Authors	Matthias Bröcheler, Andrea Pugliese and V.S. Subrahmanian
Abstract	Subgraph matching is a key operation on graph data. Social network (SN) providers may want to find all subgraphs within their social network that "match" certain query graph patterns. Unfortunately, subgraph matching is NP-complete, making its application to massive SNs a major challenge. Past work has shown how to implement subgraph matching on a single processor when the graph has 10-25M edges. In this paper, we show how to use cloud computing in conjunction with such existing single processor methods to efficiently match complex subgraphs on graphs as large as 778M edges. A cloud consists of one "master" compute node and k "slave" compute nodes. We first develop a probabilistic method to estimate probabilities that a vertex will be retrieved by a random query and that a pair of vertices will be successively retrieved by a random query. We use these probability estimates to define edge weights in an SN and to compute minimal edge cuts to partition the graph amongst k slave nodes. We develop algorithms for both master and slave nodes that try to minimize communication overhead. The resulting COSI system can answer complex queries over real-world SN data containing over 778M edges very efficiently.

Title	Visualizing the evolution of users' profiles from online social networks
Authors	Dieudonné Tchuente, Marie-Françoise Canut, Nadine Baptiste Jessel, André Péninou, Anass El Haddadi
Abstract	Nowadays, online social networks host more and more applications in order to provide their users with the possibility of finding everything they need on a single platform. The number and diversity of interactions that take place over time between users and applications within these platforms make these environments very good candidates for learning various types of information about users' interests. We are particularly interested in the determination of users' short-term and long-term interests which are essential for adaptative systems that take into account the evolution of user's needs. While studies in adaptative systems focus on computing interests' weight value and time periods to determine user's short-term and long-term profile, we focus instead on temporal graphs' visualization of users' interests. From a case study on Facebook, we use dynamic graphs in order to view the influence of social ties on the user's interests.

Session	Models for Social Networks II	
13:45-15:30	Wednesday, August 11, 2010	Room: O-95
Chair:	Pal-Roe SandsoY	

Title	Semi-Supervised Classification of Network Data Using Very Few Labels
Authors	Frank Lin and William W. Cohen
Abstract	The goal of semi-supervised learning (SSL) methods is to reduce the amount of labeled training data required by learning from both labeled and unlabeled instances. Macskassy and Provost [1] proposed the weighted-vote relational neighbor classifier (wvRN) as a simple yet effective baseline for semi-supervised learning on network data. It is similar to many recent graph-based SSL methods (e.g., [2], [3]) and is shown to be essentially the same as the Gaussian-field classifier proposed by Zhu et al. [4] and proves to be very effective on some benchmark network datasets. We describe another simple and intuitive semi-supervised learning method based on random graph walk that outperforms wvRN by a large margin on several benchmark datasets when very few labels are available. Additionally, we show that using authoritative instances as training seeds — instances that arguably cost much less to label — dramatically reduces the amount of labeled data required to achieve the same classification accuracy. For some existing state-of-the-art semi-supervised learning methods the labeled data needed is reduced by a factor of 50.

Title	How to Forget the Second Side of the Story: A New Method for the One-Mode Projection of Bipartite Graphs
Authors	Katharina A. Zweig
Abstract	Many relationships naturally come in a bipartite setting: authors that write articles, proteins that interact with genes, or customers that buy, rent or rate products. Often we are interested in the clustering behavior of one side of the graph, i.e., in finding groups of similar articles or products. To find these clusters, a one-mode projection is classically applied, which results in a normal graph that can then be clustered by various methods. For data with strongly skewed degree distributions, a classical one-mode projection leads to very dense graphs with little information. In this article we propose a new method for a meaningful one-mode projection of any kind of bipartite graph B to a sparse general graph G, using a modified version of the so-called leverage. We provide ample experimental evidence that the method creates edges in G only between statistically significant neighbors and that the results are reliable and stable. For this, we present an output sensitive algorithm to compute Kendall's τ. Moreover, for a subset of films in the Netflix prize data set, we can prove that the proposed method not only detects the statistically significantly co-rented films in the data set but that these are also the films that are the most similar ones by content. Thus, our method cannot only be used for the one-mode projection of bipartite graphs in general but also especially for any kind of market basket data to find pairs of most similar products as needed for, e.g., recommendation systems.

Session	Models for Social Networks II (Cont.)	
13:45-15:30	Wednesday, August 11, 2010	Room: O-95
Chair:	Pal-Roe SandsoY	

Title	A study on social network metrics and their application in trust networks
Authors	Iraklis Varlamis, Magdalini Eirinaki and Malamati Louta
Abstract	Social network analysis has recently gained a lot of interest because of the advent and the increasing popularity of social media, such as blogs, social networks, microblogging, or customer review sites. Such media often serve as platforms for information dissemination and product placement or promotion. In this environment, influence and trust are becoming essential qualities among user interactions. In this work, we perform an extensive study of various metrics related to the aforementioned elements, and their effect in the process of information propagation in the virtual world. In order to better understand the properties of links and the dynamics of social networks, we distinguish between permanent and transient links and in the latter case, we consider the link freshness. Moreover, we distinguish between local and global influence and compare suggestions provided by locally or globally trusted users.

Title	Subjective Document Classification using Network Analysis
Authors	Minkyoung Kim, Byoung-Tak Zhang and June-Sup Lee
Abstract	Network analysis methods have been applied in many areas such as computer science, social science, biology and physics. In this paper, we apply network analysis methods to the linguistic domain for classifying subjective documents. Particularly, we view that subjective documents are related to one another according to some common subjective words and build a subjective document network of which nodes are documents and of which links represent the similarity between two documents. In addition, we consider that adjectives and adverbs are the two representatives carrying sentimental polarities among parts of- speeches, and perform experiments for three cases, using adjectives only, adverbs only, and both adjectives and adverbs together. In conclusion, this paper proposes a new method to the subjective document classification problem by applying network analysis methods without requiring linguistic domain knowledge and suggests the possibility of detecting themes among documents rather than binary classification.

Session	Recommendation and Prediction	
13:45-15:30	Wednesday, August 11, 2010	Room: O-96
Chair:	Tansel Ozyer	

Title	A Unified Framework for Link Recommendation Using Random Walks
Authors	Zhijun Yin, Manish Gupta, Tim Weninger, Jiawei Han
Abstract	The phenomenal success of social networking sites, such as Facebook, Twitter and LinkedIn, has revolutionized the way people communicate. This paradigm has attracted the attention of researchers that wish to study the corresponding social and technological problems. Link recommendation is a critical task that not only helps increase the linkage inside the network and also improves the user experience. In an effective link recommendation algorithm it is essential to identify the factors that influence link creation. This paper enumerates several of these intuitive criteria and proposes an approach which satisfies these factors. This approach estimates link relevance by using random walk algorithm on an augmented social graph with both attribute and structure information. The global and local influences of the attributes are leveraged in the framework as well. Other than link recommendation, our framework can also rank the attributes in the network. Experiments on DBLP and IMDB data sets demonstrate that our method outperforms state-of-the-art methods for link recommendation.

Session	Recommendation and Prediction (Cont.)	
13:45-15:30	Wednesday, August 11, 2010	Room: O-96
Chair:	Tansel Ozyer	

Title	Mining Interaction Behaviors for Email Reply Order Prediction
Authors	Byung-Won On, Ee-Peng Lim, Jing Jiang, Amruta Purandare and Loo-Nin Teow
Abstract	In email networks, user behaviors affect the way emails are sent and replied. While knowing these user behaviors can help to create more intelligent email services, there has not been much research into mining these behaviors. In this paper, we investigate user engagingness and responsiveness as two interaction behaviors that give us useful insights into how users email one another. Engaging users are those who can effectively solicit responses from other users. Responsive users are those who are willing to respond to other users. By modeling such behaviors, we are able to mine them and to identify engaging or responsive users. This paper proposes four types of models to quantify engagingness and responsiveness of users. These behaviors can be used as features in the email reply order prediction task which predicts the email reply order given an email pair. Our experiments show that engagingness and responsiveness behavior features are more useful than other nonbehavior features in building a classifier for the email reply order prediction task. When combining behavior and non-behavior features, our classifier is also shown to predict the email reply order with good accuracy.

Title	Crumblr: Aggregation and Sharing of Spatial Content in Mobile Environments
Authors	Dragan Šunjka, Darko Obradović and Andreas Dengel
Abstract	In the growing mobile computing sector two trends are more and more wide-spread and gain further momentum: location-sensing technologies and mobile Internet access. In this paper we describe Crumblr, an application for semi-automatic capturing, aggregating and sharing spatial content in mobile environments. While existing Web 2.0 services focus mostly on points of interest or on routes, our application combines these two entities and additionally enriches them with contextual data. The result is the generation of an implicit network among people, linked via spatial information. This allows us to provide them with personalized recommendations of places, routes and related other people.

Title	A Movie Rating Prediction Algorithm with Collaborative Filtering
Authors	O. Bora Fikir, Iker O. Yaz and Tansel Özyer
Abstract	Recommendation systems are one of the research areas studied intensively in the last decades and several solutions have been elicited for problems in different domains for recommending. Recommendation may differ as content, collaborative filtering or both. Other than known challenges in collaborative filtering techniques, accuracy and computational cost at a large scale data are still at saliency. In this paper we proposed an approach by utilizing matrix value factorization for predicting rating i by user j with the sub matrix as k-most similar items specific to user i for all users who rated them all. In an attempt, previously predicted values are used for subsequent predictions. In order to investigate the accuracy of neighborhood methods we applied our method on Netflix Prize [1]. We have considered both items and users relationships on Netflix dataset for predicting movie ratings. We have conducted several experiments.

Session	Recommendation and Prediction	
13:45-15:30	Wednesday, August 11, 2010	Room: O-96
Chair:	Tansel Ozyer	

Title	Supervised Machine Learning applied to Link Prediction in Bipartite Social Networks
Authors	Nasserine Benchettara, Rushed Kanawati and Céline Rouveirol
Abstract	This work copes with the problem of link prediction in large-scale two-mode social networks. Two variations of the link prediction tasks are studied: predicting links in a bipartite graph and predicting links in a unimodal graph obtained by the projection of a bipartite graph over one of its node sets. For both tasks, we show in an empirical way, that taking into account the bipartite nature of the graph can enhance substantially the performances of prediction models we learn. This is achieved by introducing new variations of topological atttributes to measure the likelihood of two nodes to be connected. Our approach, for both tasks, consists in expressing the link prediction problem as a two class discrimination problem. Classical supervised machine learning approaches can then be applied in order to learn prediction models. Experimental validation of the proposed approach is carried out on two real data sets: a co-authoring network extracted from the DBLP bibliographical database and bipartite graph 8-years history of transactions on an on-line music e-commerce site.

Session	ASONAM and OSINT-WM 2010 Posters	
10:00-10:30	Monday, August 9, 2010	Panorama Area

Title	An Empirical Analysis on Social Capital and Enterprise 2.0 Participation in a Research Institute
Authors	Ferron Michela, Frassoni Marco, Massa Paolo, Napolitano Maurizio, Setti Davide
Abstract	Social capital broadly refers to the opportunities an individual has by being part of a network of relationships. Recently organizations started deploying internal Enterprise 2.0 platforms and Social Network Sites (SNS) to improve how employees collaborate and work. In this paper we report our analysis of the relationships between social capital and the use of a SNS in a research institute. Data collected through a survey from 54% of its 670 employees have been investigated with factor and regression analysis. We found users enabled to use the system, currently one third of all employees, have significantly higher social capital. Moreover social capital correlates with selfreported intensity of SNS usage, while we did not find statistically significant correlation with real usage extracted from system logs but for the unexpected fact that heavy users exhibit a smaller knowledge of their colleagues. We also find significant relationships between social capital and different demographic features such as seniority, job role, age, gender. There are few studies analyzing the real impact of SNSs on employees ability to collaborate. We believe further work is needed in this area so we released the SNS we developed as open source software, aiming at promoting its adoption by other organizations. We also released the dataset we collected in this analysis for comparative purposes.

Title	Community Comparison in Communication Networks
Authors	Belkacem Serrour and Hamamache Kheddouci
Abstract	If we draw the virtual topology representing the communication in networks, we observe that the structure is similar to those of the social networks. Social networks are these networks with the characteristic relating densely some entities than others. These dense zones are called communities. Generally, the members of a same community share the same interest. In this work, we look for which virtual topology (called communication graph) emerged in communication network gives communities closer to the real one. Three different communication graphs are generated and compared with the graph representing the real communities, the reference graph. Microscopic and macroscopic comparisons are done.

Title	Hierarchy in Germany's Corporate Network
Authors	Mishael Milaković, Matthias Raddant, and Laura Birg
Abstract	We examine the bipartite graphs of German corporate boards in 1993, 1999 and 2005, where we observe the persistence of a core in the corporate network, in spite of substantial turnover among core directors and changes in corporate governance and in the tail distribution of multiple board membership. Our analysis suggests that core persistence originates from selective board appointment decisions.

Session	ASONAM and OSINT-WM 2010 Posters	
10:00-10:30	Monday, August 9, 2010	Panorama Area

Title	A multidisciplinary model of dynamic and semantic social networks analysis for institutions
Authors	Christophe Thovex and Francky Trichet
Abstract	Social networks of the Web 2.0 have become global (e.g. FaceBook, MSN). In 1977, L. C. FREEMAN published the first generic metrics for Social Networks Analysis (SNA), mainly based on static graph-mining models. The objective of our work is to introduce new dynamic SNA models dedicated to SNA and to take the conceptual aspects of enterprises and institutions social graph into account. Our work is based on the definition of new multidimensional measures in SNA for new decisionmaking functions in Human Resource Management (HRM). The presented contributions makes it original. They are: (1) a measure of tension of a social network, (2) an electrodynamic and predictive system for semantic recommendations on social graphs evolutions and (3) a measure of reactance of a social network used to evaluate the individual stress of its members.

Title	Comparison of feature-based criminal network detection models with k-core and n-clique
Authors	Fatih Ozgul, Zeki Erdem, Chris Bowerman and Claus Atzenbeck
Abstract	Four group detection models (e.g. GDM, OGDM, SoDM and ComDM) are developed based on crime data features. These detection models are compared more common baseline SNA group detection algorithms. It is intended to find out, whether these four crime data specific group detection models can perform better than widely used k-core and n-clique algorithms. Two data sets which contain previously known criminal networks are used as testbeds.

Title	Designing, Analyzing and Exploiting Stake-based Social Networks
Authors	Tsung-Ting Kuo, Jung-Jung Yeh, Chia-Jen Lin, Shou-De Lin
Abstract	It is widely recognized that stakeholder information can provide important knowledge about stock investments, and an increasing number of countries require that such information is publicly available. In this paper, we present a novel way to exploit stakeholder information by using it to construct stakebased social networks, namely, StakeNet. We also provide a visualization tool that displays socio-centric and ego-centric views of the networks. In addition, we analyze stakeholders' static and dynamic behavior patterns in StakeNet, and demonstrate that most of StakeNet's properties are similar to those of a typical social network, except that the in-degree distribution does not ollow a power law distribution. Finally, we demonstrate two applications of StakeNet by exploiting it to identify important companies and to group companies together. The experiments show that our results are highly consistent with the outcomes generated by human experts. Source code, dataset, and resources are available at http://www.csie.ntu.edu.tw/~d97944007/stakenet/

Session	ASONAM and OSINT-WM 2010 Posters	
10:00-10:30	Monday, August 9, 2010	Panorama Area

Title	Mining Potential Partnership through Opportunity Discovery in Research Networks
Authors	Alessandro Cucchiarelli and Fulvio D'Antonio
Abstract	The paper introduces a formalisation of opportunities, as situations that can be exploited obtaining valuable outcomes, in the context of the social networks, and defines a methodology for discovering opportunities through the analysis of the relation among network actors. The proposed methodology is then applied to the research-oriented networks, whose members share paper coauthorship or potential research interests. Finally, its validity is tested by evaluating the research collaborations opportunities exploited in the context of two distinct research communities, modelled through the analysis of their publications over time.

Title	Augmenting Rapid Clustering Method for Social Network Analysis
Authors	J. Prabhu, M. Sudharshan, M. Saravanan and G.Prasad
Abstract	Presently, in the data mining scenario clustering of large dataset is one of the very important techniques widely applied to many applications including social network analysis. Applying more specific pre-processing method to prepare the data for clustering algorithms is considered to be a significant step for generating meaningful segments. In this paper we propose an innovative clustering technique called the Rapid Clustering Method (RCM), which uses Subtractive Clustering combined with Fuzzy Cmeans clustering along with a histogram sampling technique to provide quick and effective results for large sized datasets. Rapid Clustering Method can be used to cluster the dataset and analyze the characteristics in a social network. It can also be used to enhance the cross-selling practices using quantitative association rule mining.

Title	Linking Collaborative Filtering and Social Networks: Who are my Mentors?
Authors	Armelle Brun and Anne Boyer
Abstract	This paper proposes a new approach of mentor selection in memory-based collaborative filtering when no rating is available. Users are represented under the form of a social network. The selection of mentors is performed through the use of a community detection algorithm used in the frame of social networks. It allows to recommend items to a given user, by applying democratic voting rules within his community.

Title	Finding Patterns of Students' Behavior in Synthetic Social Networks
Authors	Gamila Obadi, Pavla Dráždilová, Jan Martinovič, Kateřina Slaninováy and Václav Snášel
Abstract	Spectral clustering is a data mining method used for finding patterns in high dimensional datasets. It has been applied effectively to solve many problems in signal processing, bioinformatics, etc. In this paper spectral clustering was implemented to find students' patterns of behavior in an elearning system, to explore the relationship between the similarity of students' behavior and their academic performance.

Session	ASONAM and OSINT-WM 2010 Posters	
10:00-10:30	Monday, August 9, 2010	Panorama Area

Title	Social Network Analysis of Iran's Green Movement Opposition Groups using Twitter
Authors	Kaveh Ketabchi Khonsari, Zahra Amin Nayeri, Ali Fathalian and Leila Fathalian
Abstract	The 2009 presidential elections forever changed the face of politics in Iran. What were at first protests against the election's results led to become demonstrations defying many fundamentals on which the Islamic Republic system of Iran is based. This movement, which is called the green movement, uses online communities like Twitter, Facebook and YouTube for news coverage and organization. Studying these communities in order to understand the structure and organization of the green movement is crucial because it provides an insight into anthropological and sociological characteristics of modern social movements. Social network analysis is a perfect tool for studying these concepts. In this paper, the prominent features of the social network related to the Green Movement are derived and analyzed.

Title	A local algorithm to get overlapping communities at all resolution levels in one run
Authors	Frank Havemann, Michael Heinz, Alexander Struck, and Jochen Gläser
Abstract	The identification of thematic structures in networks of bibliographically or lexically coupled papers is hindered by the fact that most publications address more than one theme, which in turn means that themes overlap in publications. An algorithm for the detection of overlapping natural communities in networks was proposed by Lancichinetti, Fortunato, and Kertesz (LFK) last year The LFK algorithm constructs natural communities of (in principle) all nodes of a graph by maximising the local fitness of communities. The authors define fitness as the ratio of the number of internal links to the number of all links of the nodes of a community but the denominator of the ratio is raised to the power of α. This parameter can be interpreted as the resolution at which natural communities are determined. The resulting communites can, and are due to the constructing approach likely to, overlap. The generation of communities can easily be repeated for many values of α; thus allowing different views on the network at different resolutions. We implemented the main idea of the LFK algorithm—to search for natural communities of each node of a network—in a different way. We start with a value of the resolution parameter that is high enough for each node to be its own natural community. When the resolution is reduced, each node acquires other nodes as members of its natural community, i.e. natural communities grow. For each community found at a certain α value we calculate the next lower α where a node is added. After adding a node to a community of seed node k we check whether the natural community of node k is also the natural community of a node that we have already analysed. If this is the case, we can stop analysing node k. We tested our algorithm on a small benchmark graph and on a network of about 500 papers in information science weighted with the Salton index of bibliographic coupling. In our tests, this approach results in characteristic ranges of α where a large resolution change does not lead to a growth of the natural community. Such results were also obtained by applying the LFK algorithm but since we determine communities for all resolution values in one run, our approach is considerably faster than the original LFK approach.

Title	Monitoring the Web Sentiment, the Italian Prime Minister's case
Authors	Federico Neri, Paolo Geraci and Furio Camillo
Abstract	The world has fundamentally changed as the Internet has become a universal means of communication. The Web is a huge virtual space where to express individual opinions and influence any aspect of life. Internet contains a wealth of data that can be mined to detect valuable opinions, with implications even in the political arena. Nowadays the Web sources are more accessible and valuable than ever before, but most of the times the true valuable information is hidden in thousands of textual pages. Their transformation into information is therefore strongly linked to their automatic lexical analysis and semantic synthesis. This poster describes a Knowledge Mining study performed on over 1000 news articles or posts in forum/blogs, concerning the Italian Prime Minister Silvio Berlusconi, involved last year in the sexual scandal. All these textual contributions have been Morpho-Syntactically analysed, Semantically Role labelled and Clustered in order to find meaningful similarities, hilite possible hidden relationships and evaluate their sentiment polarity.

Conference Venue

UNIVERSITY OF SOUTHERN DENMARK

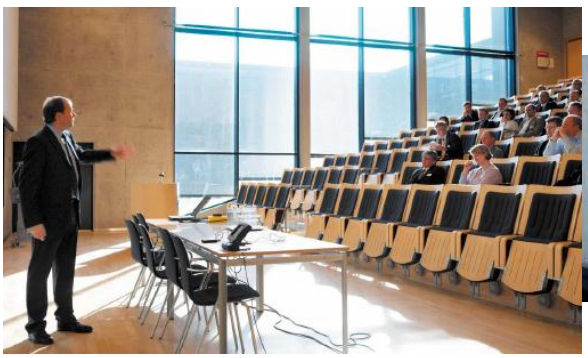
Campusvej 55, DK-5230 Odense M, Denmark
Tel.: +45 6550 1000 , http://www.sdu.dk, sdu@sdu.dk

University of Southern Denmark has more than 17,000 students and more than 2,000 employees. The university offers teaching and research at 6 campuses situated on Funen, in the south of Jutland, west of Zealand and in the capital city – in Odense, Kolding, Esbjerg, Sønderborg, Slagelse and Copenhagen.

University of Southern Denmark has created an institution of higher research and education which provides first-class educational opportunities and is cooperation partner for both public and private businesses and organisations for providing qualified labour

Conference Facilities

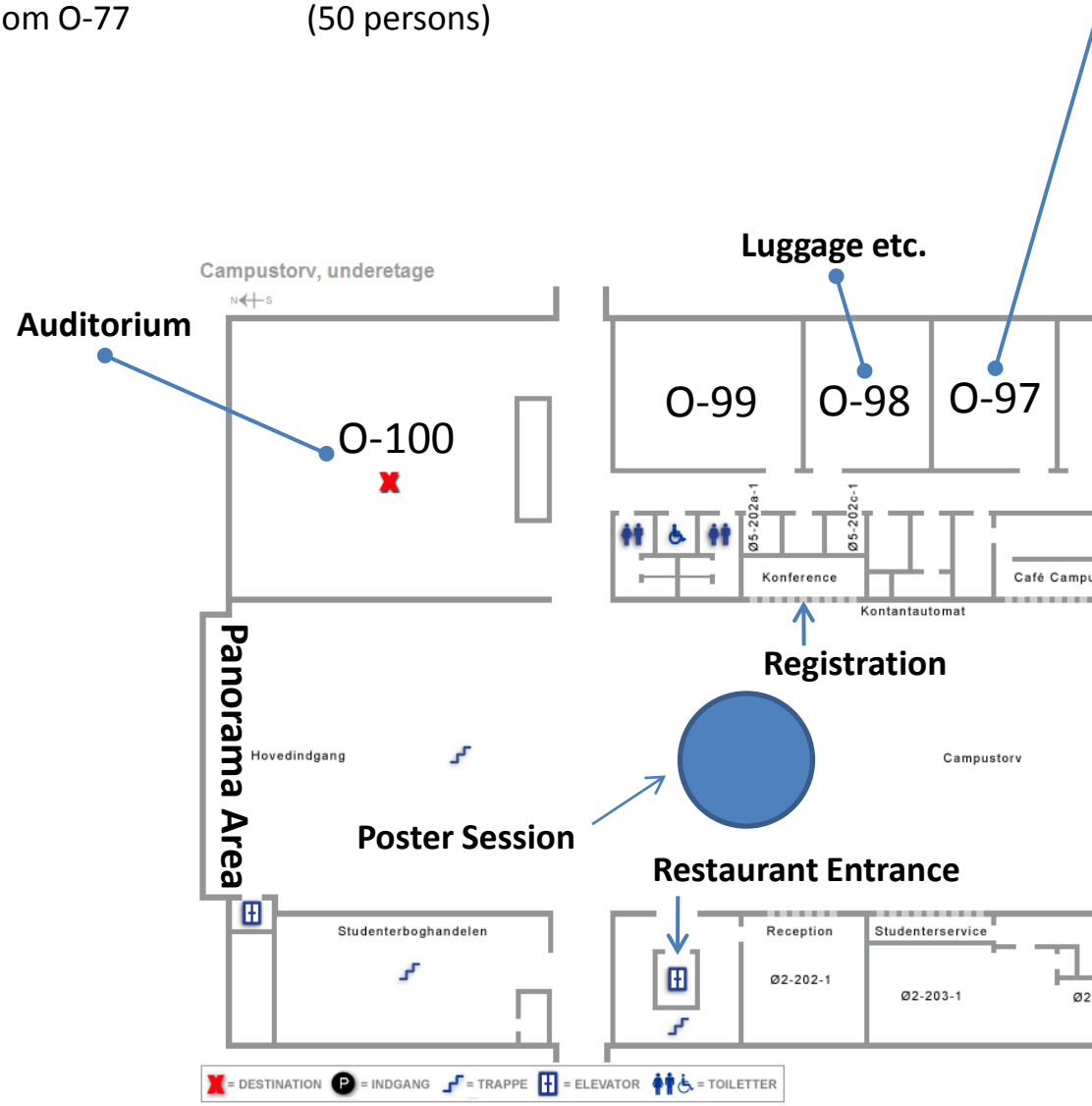
KONFERENCE



Conference Room Plan

Auditoriums / Conf. Rooms:

- Auditorium O-100 (180 persons)
- Room O-99 (44 persons)
- Room O-95 (40 persons)
- Room O-96 (40 persons)
- Room O-97 (Internet and Working Area)
- Room O-98 (Luggage)
- Room O-77 (50 persons)



Conference Room Plan

Working Area

Social Events: Reception

The reception will take place from 19:00-21:00 on August 9, 2010 at the Hans Christian Andersen Museum, Bangs Boder 29, 5000 Odense C. There will be an introduction to the exhibitions. Afterwards, you are welcome to tour the museum. A buffet will be served inside the museum. You need to find your own way to the museum.

Link: http://museum.odense.dk/museums/hans-christian-andersen-museum.aspx

Getting there

The Hans Christian Andersen Museum is situated in the centre of Odense. The address is Bangs Boder 29, 5000 Odense C.

By bus
Many of the busses in Odense stop very close to the museum. The nearest stop is Overgade or Thomas B. Thriges Gade/Hans Jensens Stræde. Timetable.

By train
From Odense Banegård Center (the railway station) there is a 10-minute walk to the museum.

By car
The museum is situated in the centre of Odense. To find the best route to the museum, try consulting the Krak website (http://www.krak.dk/ruteplan/).

Parking
Parking facilities are found close to Odense Concert Hall and SAS Radisson Hotel H.C. Andersen. Please note the parking fee upon arrival.

Accessibility

The museum has undergone total renovation in 2004 and is now as disabled-friendly as is possible. It is possible to get around the museum in a wheelchair.
You can also borrow a wheelchair by applying at tickets sales. There is a disabled-friendly toilet and lift. Please note that there is dimmed lighting in large sections of the exhibitions in order to protect the original paper manuscripts.

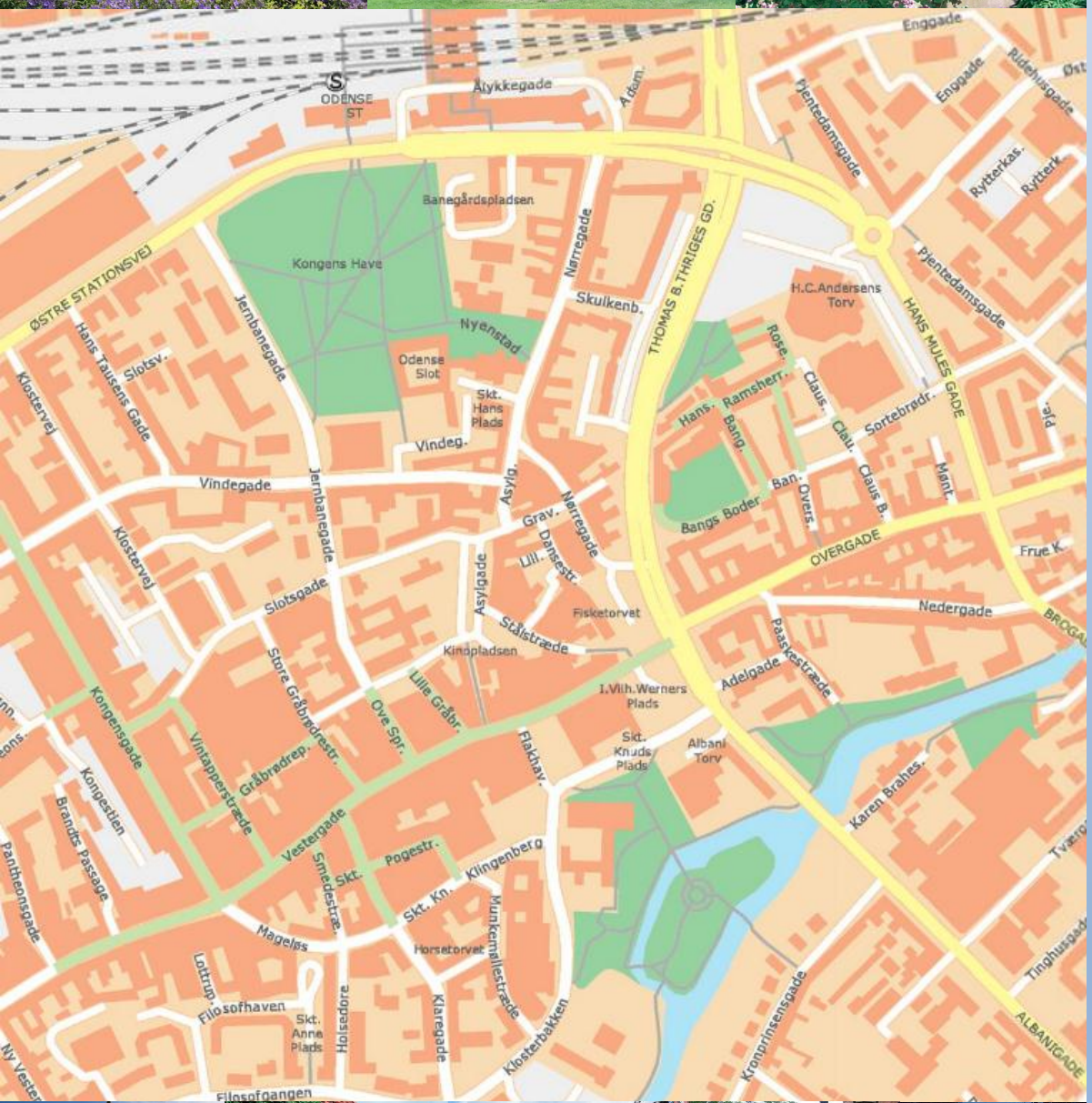
Social Events: Gala Dinner

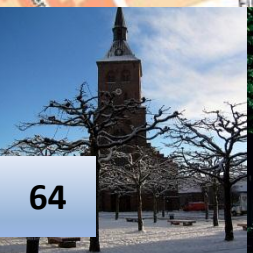
SLOT VETERANMUSEUM PARK
EGESKOV

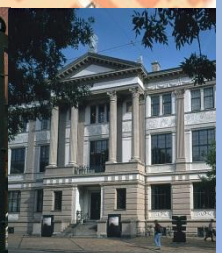
The social event will take place from 18:00-22:00 on August 10, 2010 at the restaurant Jomfru Rigborg at Egeskov Castle south of Odense. A gourmet dinner will be served accompanied by music. Buses to the social event will be available just outside the conference venue. Buses will bring you back to downtown Odense after the social event.

Link to castle: http://egeskov.dk/en/node/378
Link to restaurant: http://egeskov.dk/en/perfect-setting

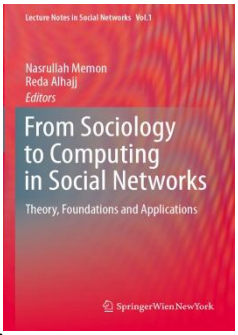
Odense Maps & Photos







Lecture Notes in Social Networks



From Sociology to Computing in Social Networks
Theory, Foundations and Applications
Series: Lecture Notes in Social Networks, Vol. 1
Memon, Nasrullah; Alhajj, Reda (Eds.)
1st Edition., 2010, 430 p. 100 illus., Hardcover, ISBN: 978-3-7091-0293-0

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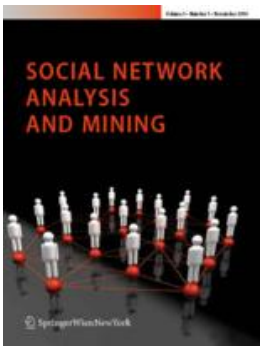
Social Network Analysis and Mining



Social Network Analysis and Mining
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Editors-in-Chief:

Nasrullah Memon
The Maersk Mc-Kinney Moller Institute
University of Southern Denmark
Campusvej 55
5230 Odense M
Denmark

Reda Alhajj
Dept of Computer Science
University of Calgary
Calgary , Alberta T2N 1N4
Canada

The rapid increase in the interest in social networks has motivated the need for a more specialized venues with wider spectrum capable of meeting the needs and expectations of a variety of researchers and readers. Social Network Analysis and Mining (SNAM) is intended to be a multidisciplinary journal to serve both academia and industry as a main venue for a wide range of researchers and readers from social sciences, mathematical sciences, medical and biological sciences and computer science. We solicit experimental and theoretical work on social network analysis and mining using different techniques from sociology, social sciences, mathematics, statistics and computer science.

The main areas covered by SNAM include: (1) data mining advances on the discovery and analysis of communities, personalization for solitary activities (like search) and social activities (like discovery of potential friends), the analysis of user behavior in open forums (like conventional sites, blogs and forums) and in commercial platforms (like e-auctions), and the associated security and privacy-preservation challenges; (2) social network modeling, construction of scalable, customizable social network infrastructure, identification and discovery of dynamics, growth, and evolution patterns using machine learning approaches or multi-agent based simulation. Papers should elaborate on data mining or related methods, issues associated to data preparation and pattern interpretation, both for conventional data (usage logs, query logs, document collections) and for multimedia data (pictures and their annotations, multi-channel usage data).

Topics include but are not limited to:

- Web community
- Personalization for search and for social interaction
- Recommendations for product purchase
- information acquisition and establishment of social relations
- Recommendation networks
- Data protection inside communities
- Misbehaviour detection in communities
- Preparing data for web mining
- Pattern presentation for end-users and experts
- Evolution of communities in the Web
- Community discovery in large-scale social networks
- Dynamics and evolution patterns of social networks, trend prediction
- Contextual social network analysis
- Temporal analysis on social networks topologies
- Search algorithms on social networks
- Multi-agent based social network modeling and analysis
- Large-scale graph algorithms
- Applications of social network analysis
- Anomaly detection in social network evolution

Link: http://www.springer.com/springerwiennewyork/computer+science/journal/13278

ASONAM 2011 Call for Papers

ASONAM

Call for Papers

ASONAM: The 2011 International Conference on Advances in Social Networks Analysis and Mining

July 25–27, 2011 * Kaohsiung, Taiwan * National University of Kaohsiung

http://asonam2011.im.nuk.edu.tw

The study of social networks originated in social and business communities. In recent years, social network research has advanced significantly; the development of sophisticated techniques for Social Network Analysis and Mining (SNAM) has been highly influenced by the online social Web sites, email logs, phone logs and instant messaging systems, which are widely analyzed using graph theory and machine learning techniques. People perceive the Web increasingly as a social medium that fosters interaction among people, sharing of experiences and knowledge, group activities, community formation and evolution. This has led to a rising prominence of SNAM in academia, politics, homeland security and business. This follows the pattern of known entities of our society that have evolved into networks in which actors are increasingly dependent on their structural embedding.

The international conference on Advances in Social Network Analysis and Mining (ASONAM 2011) will primarily provide an interdisciplinary venue that will bring together practitioners and researchers from a variety of SNAM fields to promote collaborations and exchange of ideas and practices. ASONAM 2011 is intended to address important aspects with a specific focus on the emerging trends and industry needs associated with social networking analysis and mining. The conference solicits experimental and theoretical works on social network analysis and mining along with their application to real life situations.

General areas of interest to ASONAM 2011 include information science and mathematics, communication studies, business and organizational studies, sociology, psychology, anthropology, applied linguistics, biology and medicine.

More specialized topics within ASONAM include, but are not limited to:

- Anomaly detection in social network evolution
- Application of social network analysis
- Application of social network mining
- Communities discovery and analysis in large scale online social networks
- Communities discovery and analysis in large scale offline social networks
- Connection between biological similarities and social network formulation
- Contextual social network analysis
- Contextual social network mining
- Crime data mining and network analysis
- Cyber anthropology
- Dark Web
- Data protection inside communities
- Detection of communities by document analysis
- Dynamics and evolution patterns of social networks
- Economical impact of social network discovery
- Evolution of patterns in the Web
- Evolution of communities in the Web
- Evolution of communities in organizations
- Geography of social networks
- Impact of social networks on recommendations systems
- Information acquisition and establishment of social relations
- Influence of cultural aspects on the formation of communities
- Knowledge networks
- Large-scale graph algorithms for social network analysis
- Misbehavior detection in communities
- Migration between communities
- Multi-agent based social network modeling and analysis
- Open source intelligence
- Pattern presentation for end-users and experts
- Personalization for search and for social interaction
- Preparing data for Web mining
- Political impact of social network discovery
- Privacy, security and civil liberty issues
- Recommendations for product purchase, information acquisition and establishment of social relations
- Recommendation networks
- Scalability of social networks
- Scalability of Search algorithms on social networks
- Social and cultural anthropology
- Social geography
- Social psychology of information diffusion
- Temporal analysis on social networks topologies
- Visual representation of dynamic social networks
- Web mining algorithms
- Web communities

Instructions for Authors

Papers reporting original and unpublished research results pertaining to the above topics are solicited. Full paper submission deadline is March 1, 2011. These papers will follow an academic review process. Full paper manuscripts must be in English with a maximum length of 8 pages (using the IEEE two-column template). *Submissions should include the title, author(s), affiliation(s), e-mail address(es), tel/fax numbers, abstract, and postal address(es) on the first page.* Papers should be submitted to the conference Web site: asonam.im.nuk.edu.tw. If Web submission is not possible, manuscripts should be sent as an attachment via email to iting@nuk.edu.tw by March 1, 2011. The attachment must be in PDF or Word .doc format.

Papers will be selected based on their originality, timeliness, significance, relevance, and clarity of presentation. Authors should certify that their papers represent substantially new previously unpublished work. Paper submission implies that the intent is for one of the authors to present the paper if accepted and that at least one of the authors register for a full conference fee.

Honorary General Chairs

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Ing-Chung Huang *National University of Kaohsiung*
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Kai Wang *National University of Kaohsiung*
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Web Chair

Hsin-Chang Yang *National University of Kaohsiung*

We will again to seek cooperation with:

Association for Computing Machinery
SIGKDD
SIGCHI
SIGSPATIAL
IEEE computer society
IEEE TCDE
IEEE TCGC

2010 International Conference on Advances in Social Network Analysis and Mining

9-11 August 2010 / Odense, Denmark

UNIVERSITY OF SOUTHERN DENMARK

Designed by: Panagiotis Karampelas, ASONAM 2010, Publication Chair