New Frontiers in Computing Conference

Social Network Analysis: It's Who You Know

15th Annual NFIC Conference
Braun Auditorium, Stanford University, Saturday, May 11, 2013
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Conference Schedule

9:30 AM – 10:00 AM  Registration/Networking

10:00 AM – 12:00 PM  Panel: Extracting Meaning and Dynamics from Social Network Data
     Ian Hersey, CTO of Attensity on Lessons from Large-Scale Social Analytics
     Michael Wu, Principal Scientist, Analytics at Lithium on Let's Do a Live Experiment: Quantifying Collaboration with Social Network Analysis
     Rong Yan, Facebook Manager on Machine Learning Derived Insights into Identity, Behavior, and Influence

12:00 PM - 1:00 PM  Lunch and Networking

1:00 PM – 2:00 PM  Panel: Social Computing Languages and Tools
     Zahan Malkani, Facebook on Dog: A Social Media Programming Language
     Shivakumar Vaithyanathan, IBM Chief Scientist on Declarative Systems for Analytics

2:00 PM - 2:30 PM  Afternoon Break

2:30 PM – 3:30 PM  Panel: Privacy Implications of Social Network Analysis
     Laura Jacob, President of IEEE-SSIT on Context Collapse: Fighting the Losing Battle in the Privacy War
     John Rehling, Research Scientist, reputation.com on Implications of Social Media Infrastructure on Reputation

3:30 PM – 4:30 PM  Demo, Interaction with your own wireless devices, and Networking
About New Frontiers in Computing

Introduction
Keeping up to speed, especially in Silicon Valley, is crucial for today's engineers and scientists. Possessing adequate knowledge to make reasoned decisions regarding an emerging technology's importance plays an essential role in professional career success. The NFIC conference was organized to provide engineers and scientists with an effective means to achieve that goal. For more information about NFIC, please visit our website http://www.nfic-us.org.

Mission Statement and Vision
Co-organized initially by IEEE –Computer Society/Silicon Valley Chapter and NATEA in 1999, the New Frontiers in Computing Conference started providing computer and engineering professionals with enough technical information on a developing field to make informed decisions as to its role in their professional careers. It has achieved this for the last 14 years by presenting an inexpensive one-day conference on emerging technologies such as Cloud Computing, Nanotechnology, Multi Core Processors and RFID. The presenters are recognized leaders and experts from both the research and the emerging application’s communities. Each presentation provides the attendee with solid technical information regarding an important aspect of the emerging technology.

Organizers
North America Taiwanese Engineering & Science Association (NATEA): The North America Taiwanese Engineering & Science Association was founded on March 2, 1991 in Silicon Valley. Since then, NATEA has grown into twelve Regional Chapters across North America with 2,200 members. Many members serve in leading-edge technical and managerial positions and are founders of some of the most successful high-tech companies.

IEEE Computer Society, Santa Clara Valley Chapter: The IEEE Computer Society - Silicon Valley Chapter has over 2,500 members. The CS promotes an active exchange of ideas and technological innovation among its members. It is the largest IEEE Computer Society Chapter in the world.

IEEE Stanford University: The student branch of IEEE at Stanford University promotes services and organizes activities for the EE/CS graduate and undergraduate community at Stanford.

Past NFIC Conferences
12th NFIC (2010): Cloud Computing and the Web, San Jose State University
11th NFIC (2009): Handheld Devices, Stanford
9th NFIC (2007): Multi-Core Processors, Stanford
8th NFIC (2006): The World with RFID, The Biltmore Hotel, Santa Clara
7th NFIC (2005): Sensor Networks — The New Environment, Stanford
6th NFIC (2004): Semiconductors to Nanotechnology — The Coming Convergence, Stanford
5th NFIC (2003): Emerging Issues in Security, Mobility, and Privacy, Stanford
4th NFIC (2002): Bioinformatics, Stanford
3rd NFIC (2001): Nanotechnology, Stanford
2nd NFIC (2000): Internet Protocol Telephony, Stanford
Message from the Co-Chairs

As the conference co-chairs, we are very glad to welcome you all to the 15th *New Frontiers in Computing Conference*, and we hope you all enjoy our new formats with more interactive discussion with our wonderful panel experts.

While social networks have already transformed the way a generation lives, the ways in which information is generated through social networks and ways in which that information is analyzed and used are now rapidly evolving. Understanding emerging technical avenues in social media and building on them is the goal of this year’s NFIC conference.

Warmest and best regards,
Steve B. Wu, Ph.D.
Conference Co-Chair
NATEA Silicon Valley

Roshni Cooper
Conference Co-Chair
Stanford IEEE Student Chapter

Hans Spanjaart
Conference Co-Chair
Chair, IEEE Santa Clara Valley Computer Society
Dr. Steve B. Wu is a professor and an entrepreneur with extensive management and development experience in high tech environments. Dr. Wu holds a Ph.D. in Computer and Information Science, had his own startup company, and was part of executive teams in many high tech companies that went through IPO (initial public offerings) or went through M&A (mergers and acquisitions) by large industry giants Oracle and Cisco among others. Dr. Wu specialized in enterprise software development in cloud computing, data center, SaaS and collaboration, systems and applications performance modeling, IT infrastructure design, transaction and on-line applications among others.

Roshni Cooper is a Ph.D. candidate in Electrical Engineering at Stanford University. Her research focuses on image processing applied to the biological imaging of neurons. Prior to attending Stanford, Roshni was a hardware engineer at Cisco Systems, where she developed video processing algorithms for Telepresence, Cisco’s HD video conferencing system. Roshni holds Bachelor of Science and Master of Engineering degrees from MIT. Her thesis topic was the hardware and software development of handheld biomedical devices for neuromuscular health assessment.

Hans Spanjaart is Sr. Program Manager of Altera’s SoC FPGA product line. He has over 25 years of experience in the semiconductor industry, leading engineering teams in a range of research and development programs, including embedded processors, media processors, complex SoCs, compilers, software and mixed-signal.

He is Chair of the IEEE Computer Society Chapter of Santa Clara Valley and founder of Lat13, a company in wireless sensor technology. Prior to Altera, he worked at NXP Semiconductors as Sr. Director of embedded media processing. Before that he worked as Director of SoC development in NXP's TV Consumer Business, and Director of embedded MIPS processors. Earlier in his career, Hans held various positions as project and engineering lead of ASIC products in signal processing, security and handheld computers.
Biography

Ian brings more than 25 years of experience delivering innovative research technology into the commercial mainstream. In his last role as Chief Technology Officer and executive vice president of products for Attensity, Ian was responsible for providing the technical and strategic product vision to complement the company’s business vision, setting the tone and direction for Attensity’s technologies and business applications. Prior to Attensity, Ian was vice president of technology development and strategy at Business Objects, an SAP company. He came to Business Objects through its acquisition of Inxight Software. As co-founder of Inxight, Ian led the definition and development of what became the industry’s broadest text analysis platform; he also held senior product management and engineering management roles at Logos Corporation and Inso Corporation. Ian began his commercial career at IBM as a computational linguist.

Abstract

Social media is rightfully a hot area of academic and commercial investment due to the availability of public data, open source software platforms that can handle relatively large data volumes, cloud infrastructure that can (in the beginning at least) obviate the need for large hardware capital expenditures, and use cases that commercial customers and funding sponsors can see value in. However, there is a big difference between a prototype and a commercial-grade service. This talk will outline a number of technical (and a few business) lessons learned while building out such a service.
Speaker
Michael Wu, Ph.D.
Chief Scientist, Lithium Technologies Inc.

“Let's Do a Live Experiment: Quantifying Collaboration with Social Network Analysis”

Biography

Michael Wu is the Chief Scientist at Lithium Technologies Inc. Michael received his Ph.D. from UC Berkeley’s Biophysics Graduate Program, where he modeled visual processing within the human brain using math, physics, and machine learning. He is currently applying similar data-driven methodologies to investigate and understand the complex dynamics of the social web. Michael has developed the Facebook Engagement Index (FEI), Community Health Index (CHI) and many predictive social analytics with actionable insights. His R&D work at Lithium has won him the recognition as a 2010 Influential Leader by CRM Magazine.

In addition to the purely empirical methods, Michael also leverages social principles that govern human behavior (from sociology and anthropology, to behavioral economics and psychology, etc.) to decipher the intricate human components of social interactions. Through this combined bottom-up and top-down approach, Michael has developed a sophisticated predictive model of influence and an evaluative framework for understanding gamification. To tackle challenging open problems (like the value of WOM, social ROI, or the loyalty implications of gamification, etc.), Michael collaborates with academicians to conduct research on these unsolved problems. His research and insights has been compiled and published in “The Science of Social”, an easy to read e-book for business audience.

Michael has been a DOE Fellow during his graduate career and was awarded 4 years of full fellowship under the Computational Science Graduate Fellowship. During his fellowship tenure, he has served at the Los Alamos National Lab conducting research in face recognition. Prior to his Ph.D., Michael received his triple major undergraduate degree in Applied Math, Physics, and Molecular & Cell Biology from UC Berkeley.
Abstract

In this session, I will conduct a live collaboration experiment with you, the audience of the NFIC conference. So please bring your mobile or computing devices and get ready on Twitter.

As a part of this experiment, I will present the basic computational framework of social network analysis (SNA). I will offer an intuitive understanding of the basic concepts in SNA and explain its computation in layman's term. Subsequently, I will illustrate two applications of this computational framework: (1) finding influencers within a social network, and (2) quantifying collaboration in an organization.

Finally I will perform a real-time analysis of the live audience collaboration using our framework with open source SNA tools. The result of this analysis as well as the audience collaboration will be presented at the end of the session. I will examine the result of the collaboration together with the audience. And I will describe some of the high level insights we can glean from this live collaboration experiment.
Speaker
Rong Yan, Ph.D.
Engineering Manager for Ads Relevance and Quality, Facebook
“Machine Learning Derived Insights into Identity, Behavior, and Influence”

Biography

Dr. Rong Yan is currently the Engineering Manager for Ads Relevance and Quality team in Facebook, dedicated to improving the delivery performance of Facebook ads via large-scale data optimization. He was a Research Staff Member in the IBM T.J. Watson Research Center from 2006 to 2009. Dr. Yan received his M.Sc. (2004) and Ph.D. (2006) degrees from Carnegie Mellon University's School of Computer Science.

Dr. Yan's research interests include large-scale machine learning, data mining, and digital/social media analysis. He has served or is serving as co-chairs for 10 conferences/workshops, including a program co-chair in ACM Multimedia 2012, and as a Program Committee member in more than 40 ACM/IEEE conferences. He received the Best Paper runner-up awards in ACM MM 2004 and ACM CIVR 2007. He led the technical effort for Facebook's face detection/recognition service, and the automatic video retrieval system that achieves the best performance in the world-wide TRECVID evaluation in 2003/2005. He has received the IBM Research External Recognition Award in 2007. Dr. Yan has authored or co-authored five book chapters and more than 60 international conference and journal papers. Dr. Yan gives tutorials and guest lectures at several major conferences and universities.
Abstract

As the leader of the social media revolution, Facebook has grown into the most popular social networking site in the world today with over one billion monthly active users. The rapidly grown, effectively delivered, massively contributed and incrementally socialized media content has fundamentally reshaped the ways for humans to learn about this world, express their thoughts and interact with one another. This social breakthrough has led to uncharted opportunities for data-mining millions of users to gain insights about user identities, social behavior and influence patterns. I will describe several machine learning applications at Facebook, including real-time event prediction, friend suggestions and network analysis to harvest the crowd intelligence from the “big” social media data.
“Dog: A Social Media Programming Language”

Biography

Zahan is an engineer on Facebook's Growth & Analytics team, figuring out what drives interaction between people. He has worked with luminaries in the Social Networking research space including Bernardo Huberman at HP Labs, and Sep Kamvar at Stanford and MIT. He graduated from Stanford University with a B.Sc. in Physics and a M.Sc. in Computer Science. His work has been previously presented at forums such as UIST, and it is now being developed at the MIT Media Lab.

Zahan's research interests lie at the intersection of interaction design, and using qualitative and quantitative methods to understand people. He is passionate about building tools that take advantage of those insights to make design and development easier.

Abstract

Dog is a new programming language that makes it easy and intuitive to create social applications. Dog focuses on a unique and small set of features that allows it to achieve the power of a full-blown application development framework. One of Dog's key features is built-in support for interacting with people. Dog provides a natural framework in which both people and computers can be given instructions and return results. It can perform a long-running computation while also displaying messages, requesting information, or even sending operations to particular individuals or groups. By switching between machine and human computation, developers can create powerful workflows and model complex social processes without worrying about low-level technical details. Dog was collaboratively developed by Sep Kamvar, Salman Ahmad, Alexis Battle and Zahan.
Biography

Shivakumar Vaithyanathan is the IBM Chief Scientist for Big Data Analytics and the Department Manager of the Large Scale Analytics and Discovery Group at the IBM Almaden Research Center. Since joining IBM in 1998, he has been involved in multiple research areas. His department is currently involved in build systems for scalable text analytics, enterprise search and large-scale machine learning. Multiple technologies developed in his department currently ship with several IBM products including IBM’s Big Data Products. Prior to IBM, Shivakumar was part of the newly formed Altavista Group at Digital. Shivakumar has co-authored more than 40 publications and was an invited keynote speaker at the 2011 German Database Conference and 2011 ACM SiGIR Industrial Track.

Abstract

In this talk I will describe some real-world applications of social media analytics that we are currently working on, ranging from lead generation and evaluating digital marketing effectiveness in financial services to evaluating campaign effectiveness in media and entertainment. I will then describe the tools we have developed for text and entity analytics and statistical modeling. In particular I will motivate and describe the declarative languages built for these analytics tasks. Time permitting I will describe speeds, feeds and comparisons.
Speaker
Laura Jacob
Software Engineer, Factset Research Systems
“Context Collapse: Fighting the Losing Battle in the Privacy War”

Biography

Laura Jacob works as a Software Engineer for Factset Research Systems in Norwalk, Connecticut, and has worked in the software industry for more than 10 years. She graduated from the Pace University in 2008 with a degree in Computer Science. She is the 2013 President of IEEE’s Society on the Social Implications of Technology. The Society on the Social Implications of Technology publishes Technology & Society magazine, hosts conferences and lectures around the world, and works to further IEEE’s mission of “Advancing Technology for Humanity.” She is also a liaison to IEEE’s Women In Engineering Committee. She blogs for SSIT at socialimplicationsoftechnology.wordpress.com.
Abstract

The concept of context collapse - of the problem we face when trying to present ourselves without an explicit audience - has been around for decades, but the rise of social media has made it something that many people experience on a daily basis. Realizing a post or a photo that was intended for a small audience is in fact reaching a much wider one and hastily deleting it after it’s already too late is a rite of passage for all social media users. Most people who use Facebook are sharing much more information with companies they have ‘Liked’ then they realize. Different social media sites all try to tackle this problem in different ways, but they all fall short. When they do, people wind up compromising their own privacy by sharing information much more widely than they intend.
Speaker
John Rehling
Senior Research Scientist, Reputation.com
“Implications of Social Media Infrastructure on Reputation”

Biography

John Rehling is a veteran in creating Natural Language Processing that interprets text from the Internet. For the past nine years he has built systems that help users and enterprise customers quickly find the meaning in news, video, social media, e-commerce catalogs, and reviews. @JRehling is the voice of his views and humor on Twitter. He is currently the Senior Research Scientist at Reputation.com.

Abstract

Reputations can be made or unmade online. For celebrities, each piece of news spreads like wildfire to all forms of media. For the rest of us, social media is a chancy game of risk and reward. Pro-privacy safeguards in social media implementation may augment but never replace the security that comes from caution and maintaining positive relationships both real life and online.
Thank you for attending the 2013 New Frontiers in Computing Conference

Thank you to the following for making NFIC 2013 possible:

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build vibrant customer communities that drive sales,
reduce support costs, and accelerate innovation

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Taiwan Trade Center, San Francisco is a branch office of the Taiwan External Trade Development Council (TAITRA). Founded in 1970 and supported by the Taiwan government and industrial associations, TAITRA is the foremost non-profit trade promotion organization in Taiwan. TAITRA boasts a well-coordinated trade promotion and information network of around 1000 trade specialists throughout Taiwan and over 50 branch offices worldwide.

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