

Please be seated, session will start shortly

# KDD 2014

This year's special theme:

## Data Science for Social Good

20th ACM SIGKDD Conference on Knowledge Discovery and Data Mining  
August 24-27, 2014 | New York City

Check out our APP: <http://confer.csail.mit.edu/kdd2014>

**KDD 2014**

Data Science for Social Good

20th ACM SIGKDD Conference on Knowledge Discovery and Data Mining  
Aug 24-27 New York City



# Logistics

- Paper Spotlight (KDD Madness)
  - Now starts at 8:15am
- Exhibition Hall
  - Will have plenty of food+beverage during all breaks

# KDD 2014

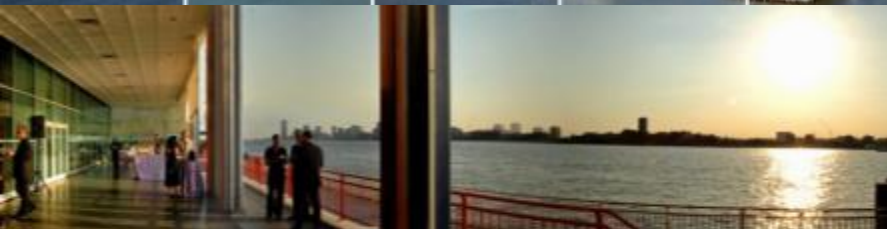
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acm

## Tuesday Reception: Pier 60 @ Chelsea Piers



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# Welcome

General Co-Chairs




**Claudia Perlich**

*Dstillery*



**Sofus Macskássy**

*Facebook*

A night scene of a beach with glowing blue waves and a starry sky. The waves are illuminated with a bright blue light, creating a shimmering effect. The sky is dark with many stars visible. The beach is sandy and the trees are silhouetted against the dark sky.

***"Don't spend your precious time asking  
'Why isn't the world a better place?'  
It will only be time wasted.  
The question to ask is  
'How can I make it better?'  
To that there is an answer."***

*- Leo Buscaglia*



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## What's New?

### Integrated Theme: Data Science for Social Good

- **Strong partnerships with industry, education & NGO's**
  - **Bloomberg, Data Kind, Donors Choose (CUP)**
- **Consider theme in reviewing & best paper**
- **Lets listen: IGNITE Sessions**

### Professional Outreach

- **Networking Lounge, Facilitated Networking Program, Data Science Market Place**

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# Congratulations and Thanks To Our Student Awardees

This year we are supporting **67** students!

Alejandra Caro , Andrew Reece , Austin Benson, Behzad Golshan, Benjamin Bachman, Bin Wu, Bryan Perozzi, Carl Shan , Christopher Lazarus , Chuanren Liu, David Miller , Dehua Cheng, Diana Palsetia , Dylan Fitzpatrick , Ellery Wulczyn , Fang Jin, Furong Li, Genaro Hernandez, Hengshu Zhu, Himabindu Lakkaraju , Huan Sun, Isaac McCreery , Jacqueline Fairley, Joyce C Ho, Julius Adebayo , Kyle Kloster, Lan Vu, Layla Pournajaf , Ling Chen, Marija Stankova, Maryam Hasan, Marzyeh Ghassemi, Matt Conway , Meng Jiang, Miguel Perez , Misha Teplitskiy , Nick Eng , Pablo Rivas, Peter Lofgren, Peter Landwehr , Phil Ngo , Polina Rozenshtein, Qian Xiao, Qu Meng, Raphael Stern , Rel Guzman Apaza, Rose Yuan, Rupinder Paul Khandpur, Sabina Tomkins , Sam Zhang , Sarah Abraham , Scott Cambo , Shaudi Mahdavi, Shuai Yuan, Tahereh Babaie, Tanmoy Chakraborty, Tevin Brown, Tristan Naumann, Vrushank Vora , Wei Lu, Xiao He, Xinran He, Yanchi Liu, Ying Wei, Yuan Quan, Yuan Yao, Zhe Chen

A night scene of a beach with glowing blue waves and a starry sky. The waves are illuminated with a bright blue light, creating a shimmering effect. The sky is dark with many stars visible. The beach is sandy and the trees are silhouetted against the dark sky.

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*- Leo Buscaglia*





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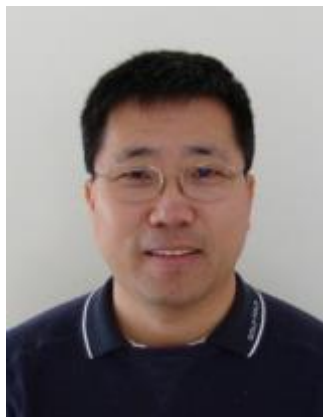
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# Welcome

## ACM SIGKDD Chair



## Bing Liu

*University of Illinois at Chicago*

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## Thank You and Welcome to KDD-2014

KDD 2014 Organizing Committee chaired by

- **Claudia Perlich & Sofus A. Macskássy**
- For your time and service to the community

KDD 2014: The **largest KDD conference** ever

- 1176 (2013) → 2200+ (2014): a huge jump
- **very very impressive!**

Innovative additions to KDD 2014

- NGO talks on the conference theme
- Bloomberg partnership/sponsorship
- Networking lounge + paper spotlight, and many others

**YOU** are KDD 2014!

- Authors, Reviewers, SIGKDD Members, Media, Invited Speakers
- Please Participate to Make it Better

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## We are SIGKDD

ACM Special Interest Group (SIG) on Knowledge Discovery and Data Mining.

- Home of data science, data mining, and analytics professionals

KDD: The premier conference for Data Science

- Research Track – very best academic contributions
- Industry/Government Track
  - Highest quality application papers
  - Invited real-world implementation and deployed applications

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## SIGKDD Leads the Big Data Revolution

### Data Grows our Community grows too!

- As the world's data science community, our mission is:
  - to shape the future of data science research

### Standing on the shoulders of big data research:

- do what we could not do before
- achieve quantum leaps in data analysis

*The best way to  
predict  
the future is to  
invent it (Alan Kay)*

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## JOIN SIGKDD

**We invite you to join  
our global community**

- Feel at home
- Share and Learn

**Members**

- \$25 (\$15 for students)
- Substantial savings on attending this great conference
- SIGKDD Explorations newsletter
- Shape the future of Data Science research

**Start a Local Chapter  
of SIGKDD**

- Strengthen your local KDD community
- Get grants for local KDD activities
- ACM's distinguished speaker program

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## KDD-2015, Sydney, Australia (10 – 13 August, 2015)

General Chairs:  
Longbing Cao &  
Chengqi Zhang (*U.  
of Technology*)

KDD-2015  
organizing  
committee  
looks forward  
to your help &  
your  
participation!

Program  
Chairs:  
Thorsten  
Joachims  
(*Cornell*) &  
Geoff Webb  
(*Monash*)



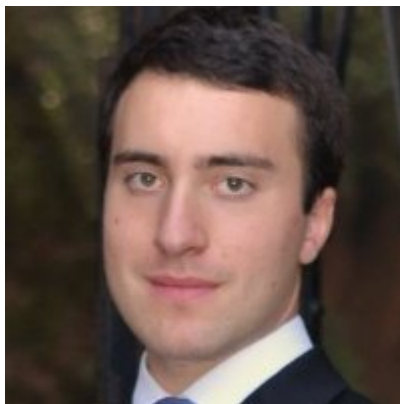
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# Welcome



**James Hodson**

*Bloomberg*

James Hodso

# Bloomberg Labs

[BloombergLabs.com](http://BloombergLabs.com)



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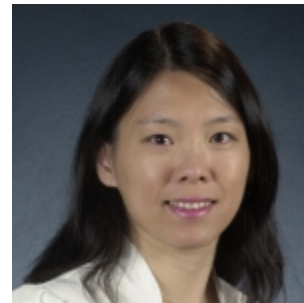


# KDD 2014 Technical Program



**Jure Leskovec**

*Stanford*



**Wei Wang**

*UCLA*

*Plots and data analysis by  
Jason Hirshman and David Zhu (Stanford)*

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## KDD 2014 Program

### Largest KDD program ever:

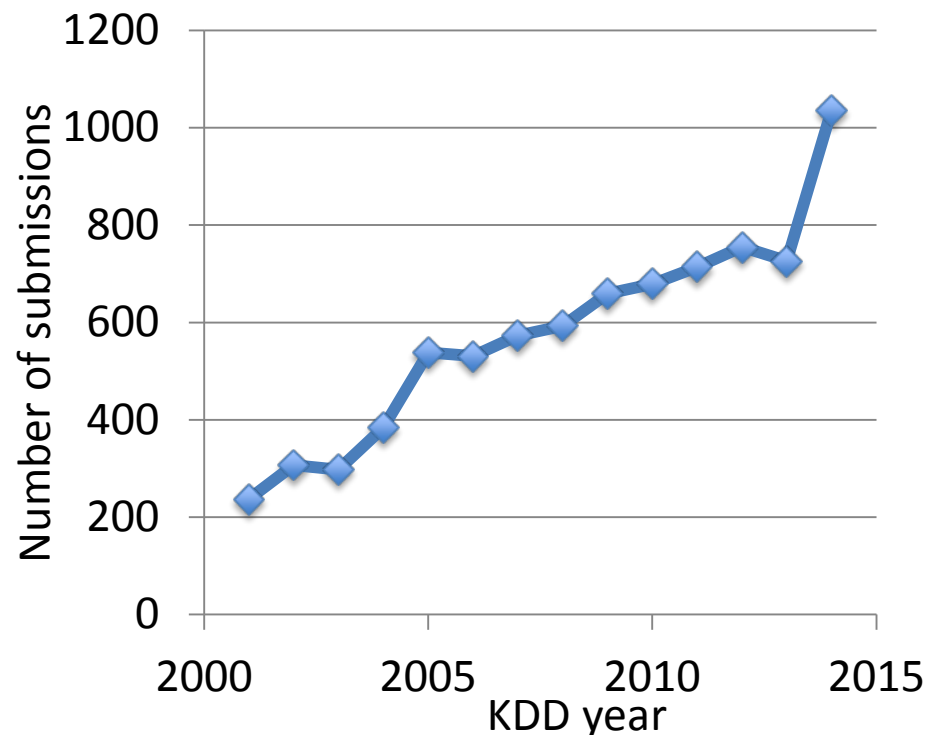
- **151** research papers (20% growth over KDD'13)
- **43** industry&govt. papers (30% growth)
- **26** workshops (75% growth)
- **11** tutorials (83% growth)

### Program highlights:

- Paper spotlights early morning (8:15am)
- Oral presentations (Mon-Wed)
- Posters at the reception (Tue night)

## KDD 2014 Research Track

- **1036** submissions from **2600** authors
  - **42%** increase over KDD '13
- **151** papers:
  - Acceptance rate **14.6%**



## KDD Reviewing Process

**46 Senior PC members + 340 PC members**

- 2971 reviews in total

### **(Rough) Acceptance rule:**

- Raw review score AND Standardized review score AND Raw meta-review AND Standardized meta-review score  $\geq$  Weak Accept
- 110 papers matched (immediate accepts)
- Remaining papers were discussed with meta-reviewers and final decisions were made

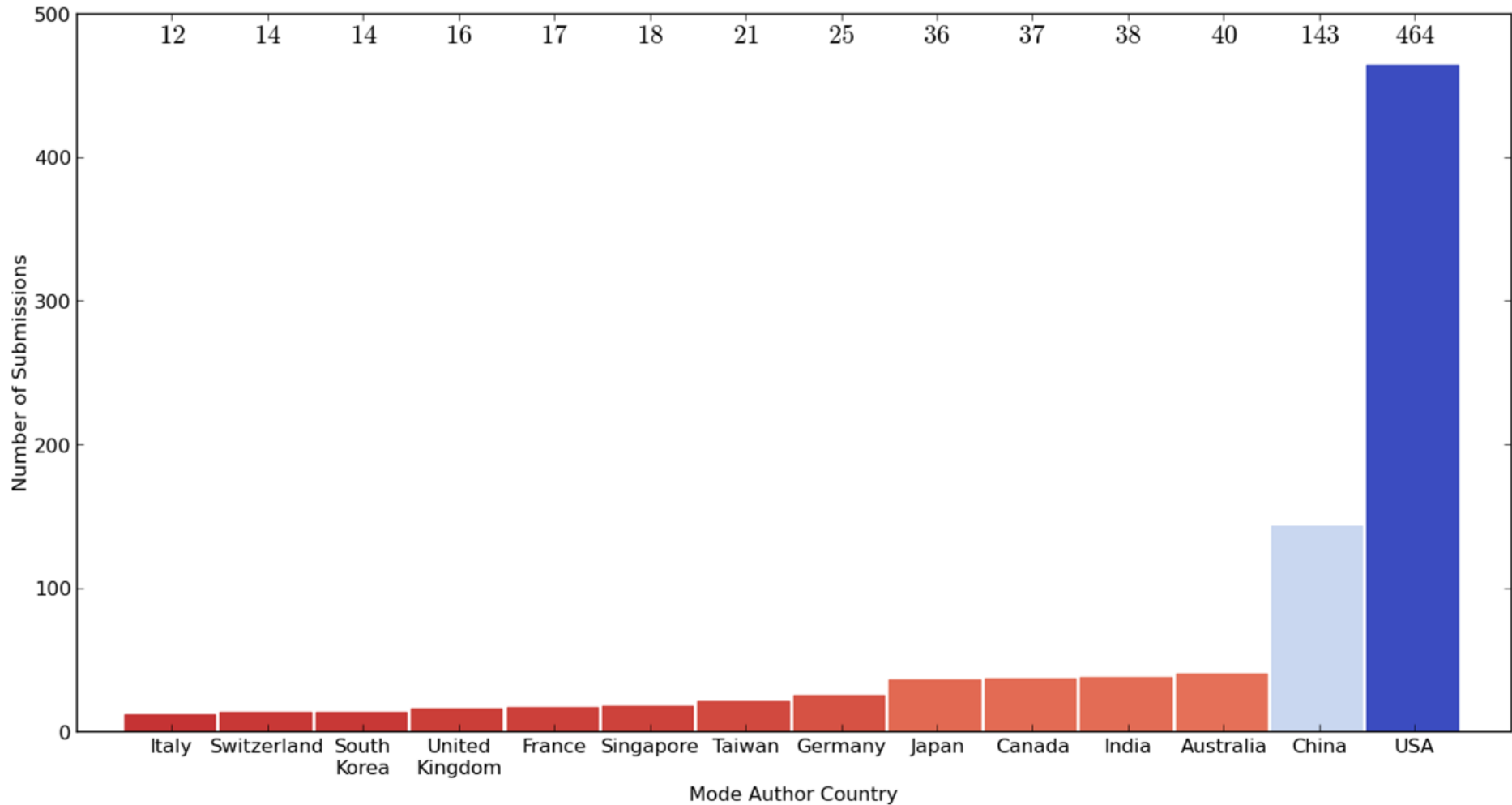
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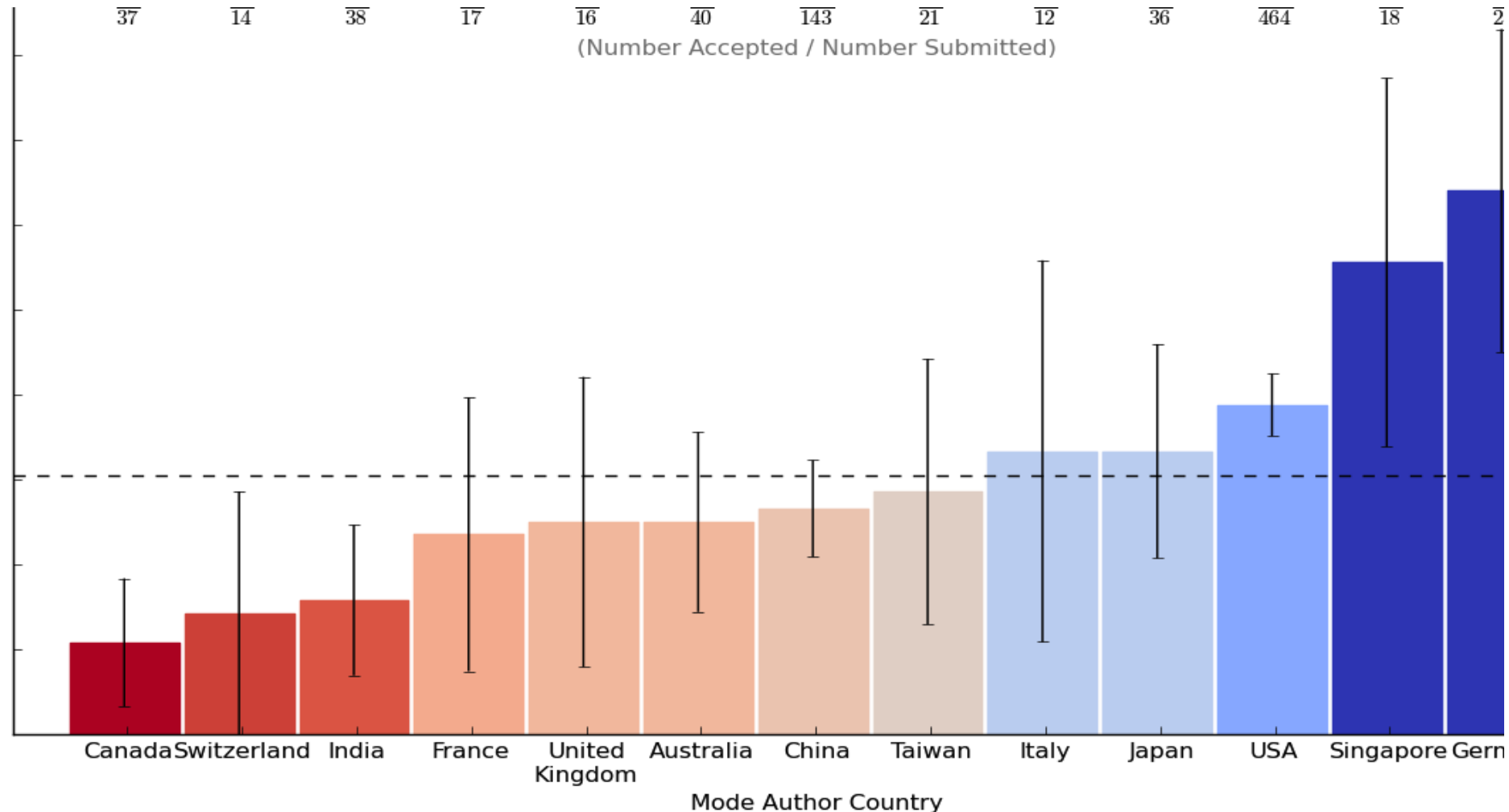


## Submissions per Country



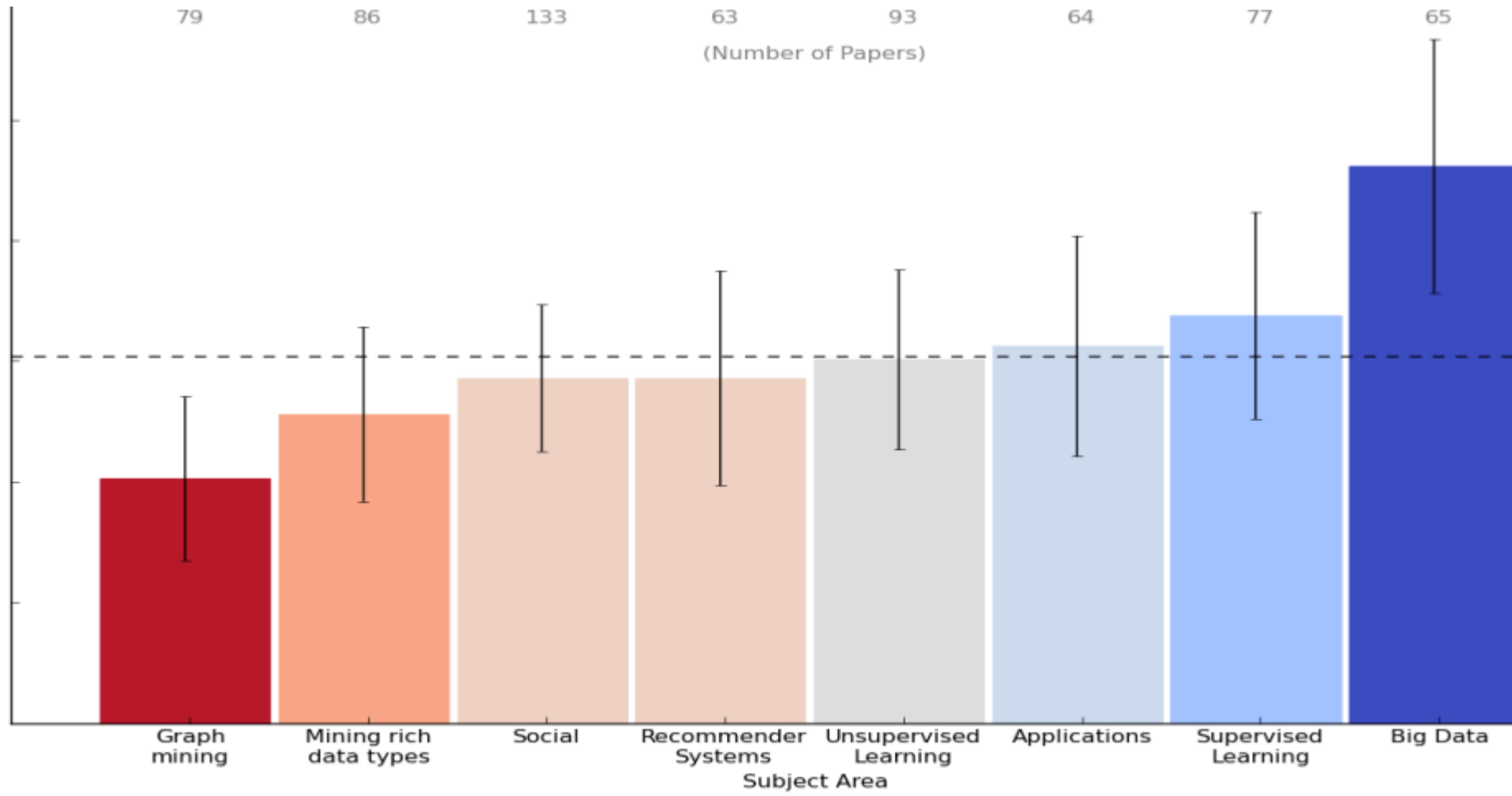


# Acceptance Rate per Country

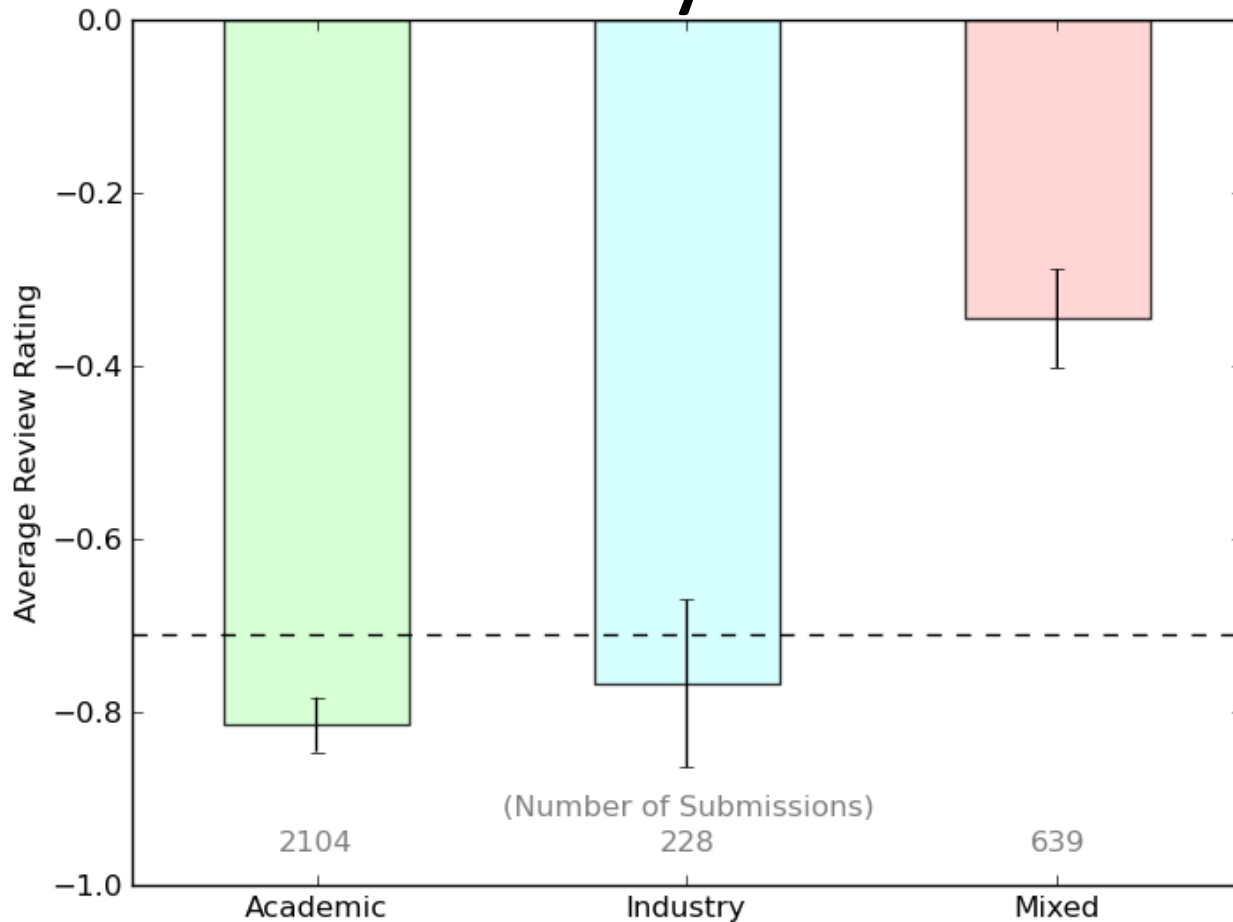




# Acceptance by Subject Area



## Papers with Authors from Academia and Industry do Better







## Predicting Paper Acceptance

Features Used	Accuracy
Random Guessing	0.50
Paper Abstract	0.57
Author Status (Past paper counts)	0.64
Author Status (DBLP graph connectivity)	0.61
Author Status (Counts + Graph)	<b>0.65</b>
Reviewer (Similarity, Graph distance to authors)	0.60
All (Abstract, Author Status, and Reviewer)	0.65

## Predicting Paper Acceptance from the Review Text

Features Used	Paper: Accepted?	Review: Score > 0?
Random Guessing	<b>0.50</b>	<b>0.50</b>
Review Text	<b>0.68</b>	<b>0.72</b>
Review Text + Numeric Score (Novelty, Presentation)	<b>0.77</b>	<b>0.77</b>
<i>Human Reading of Review Text</i>	<b>0.88</b>	<b>0.73</b>

## Predicting Paper Acceptance

**More about data analysis  
of KDD reviews on  
Tuesday at the Business  
Meeting**

		Review: $\text{score} > 0?$
Random		0.50
Review		0.72
Review (Novelty, Presentation)		0.77
<i>Human Reading of Review Text</i>	<b>0.88</b>	<b>0.73</b>

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# Best Research Track Awards



**Sunita Sarawagi**

*IIT Bombay*



**Thorsten Joachims**

*Cornell*

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# BEST STUDENT PAPER AWARD (RUNNER-UP)

---

**Wenlin Chen, Yixin Chen, and  
Kilian Weinberger**

---

“Fast Flux Discriminant for Large-Scale Sparse Nonlinear Classification”

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## BEST STUDENT PAPER AWARD

---

**Yashu Liu, Jie Wang, and  
Jieping Ye**

---

**“An Efficient Algorithm For  
Weak Hierarchical Lasso”**

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**BEST RESEARCH PAPER AWARD  
(RUNNER-UP)**



---

**Takanori Maehara, Mitsuru  
Kusumoto, and Ken-ichi  
Kawarabayashi**

---

**“Efficient SimRank Computation  
via Linearization”**

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**BEST RESEARCH PAPER AWARD**



---

**Aaron Q. Li, Amr Ahmed, Sujith Ravi, and Alexander J. Smola**

---

**“Reducing the Sampling Complexity of Topic Models”**



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# Test of Time Award



**Jieping Ye**

*Arizona State University*

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# KDD-2014 Test of Time Awards

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***Test of Time*** recognizes best papers from KDD proceedings from at least 10 years ago

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All KDD conference papers published between 1995 and 2004

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The award recognizes: **impact (research, methodology, and products)** of each (more than a decade old) KDD paper

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For 2014: 749 papers -> 20 candidates -> 6 finalists -> 3 winners

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# KDD 2014 Test-of-Time Award



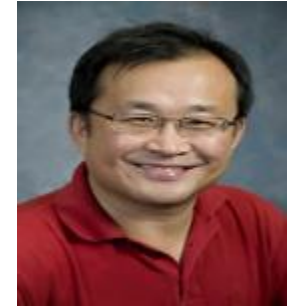
**Martin Ester**



**Hans-Peter Kriegel**



**Jörg Sander**



**Xiaowei Xu**

---

for their 1996 paper

---

“A Density-Based Algorithm for Discovering Clusters in Large Spatial Databases with Noise”

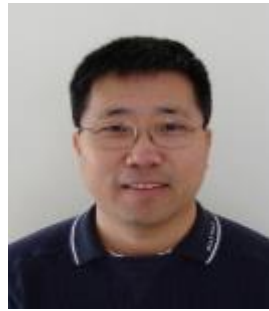
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# KDD 2014 Test-of-Time Award



**Bing Liu**



**Wynne Hsu**



**Yiming Ma**

---

for their 1998 paper

---

“Integrating Classification and Association Rule Mining”

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# KDD 2014 Test-of-Time Award



David Kempe



Jon M. Kleinberg



Éva Tardos

---

for their 2003 paper

---

“Maximizing the spread of influence through a social network”

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# Industry & Government Track



**Rayid Ghani**

*University of Chicago  
&  
Edgeflip*



**Prem Melville**

*Social Alpha*

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# “Data Science Practice Track”

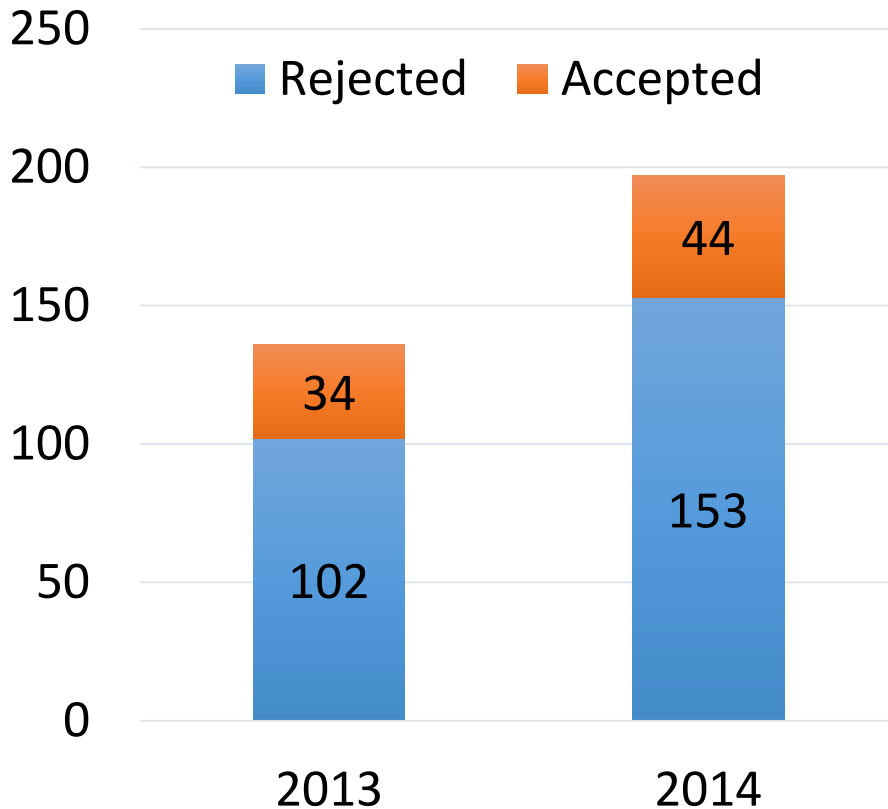
Highlights real-world contributions of the KDD community

Real Problems, Real Data, Real Solutions

Emphasis on deployed solutions, or a clear path to deployment



## IG Track: Statistics and Trends



197 submissions  
Up 45% from 2013

Acceptance rate = 22%  
Down from 25% in  
2013



## Even the SVM thinks we're biased towards real solutions



- Predictive Modeling
- Web
- Production
- Large-Scale
- Deployed



- Search
- Traffic
- Algorithms

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## Program Highlights

- Invited Industry & Government Talks
- Accepted Paper Presentations
- Special Session with 5 minute lightning talks from “Data Science for Social Good Summer Fellows”

Monday		Tuesday		Wednesday	
Health & Safety	I&G Invited Talks	Education, Privacy, & Best Paper Talks		Web	I&G invited Talks
Social Media & Listening		Monitoring & Maintenance	I&G invited Talks	Ads & Transportation	
Fraud Detection & Environment		Workforce Analytics & Personalization	I&G invited Talks		



## IG Track Thanks YOU

### Senior Program Committee

- For exceptional oversight of the review process

### Program Committee Members

- 99% of reviews were completed on time
- Allowed us to provide 80% of papers with 4 reviews

### Authors

- For the exciting diversity of papers we received
- We have an excellent program thanks to this wide range of topics covered

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# Industry and Government Track

## Best Paper Awards

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## Best Social Good Paper Award



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**BEST SOCIAL GOOD PAPER AWARD**

**KDD 2014**

The 20th ACM SIGKDD International Conference  
on Knowledge Discovery and Data Mining

August 24 – August 27, 2014 New York City, NY

*Presented to*

**Brian Abelson, Kush R Varshney, and Joy Sun**

*for*

**"Targeting Direct Cash Transfers to the  
Extremely Poor"**

Deployed a data-driven system, using satellite images, for locating villages with extreme poverty in Africa, to target for direct cash transfers via cell phones.

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## Industry/Government Best Paper



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**INDUSTRY/GOVERNMENT  
BEST PAPER AWARD**

**KDD 2014**

The 20th ACM SIGKDD International Conference  
on Knowledge Discovery and Data Mining

August 24 – August 27, 2014 New York City, NY

*Presented to*

**Diane J. Hu, Rob Hall, and Josh Attenberg**

*for*

“Style in the Long Tail: Discovering Unique  
Interests with Latent Variable Models in  
Large Scale Social E-commerce”

“Tackles a harder than  
usual recommendation  
problem --- having many  
items that are unique”

Describes the system in  
deployment and large-  
scale experimentation  
with live traffic at Etsy.

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## I&G Track Invited Talks



**Paul Bradley**

*Methodcare*



**Brian d'Alessandro**

*Dstillery*

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## Invited Talk Report

4<sup>th</sup> edition of IPE – newly merged with I&G Track

9 world-renowned experts / topics

- Commercial & Industry Applications: Monday 10:30am
  - Sri Subramaniam (Groupon); Tracey De Poalo/Jeremey Howard (Sprint)
- Medicine & Interpretable Models: Tuesday 1:30pm
  - Nigam Shah (Stanford); Cynthia Rudin (MIT)
- Government Applications
  - Drew Conway (Project Florida); Rand Waltzman (DARPA)
- Social/Emerging Markets
  - Nathan Eagle (Jana); Robert Munro (Idibon)

**\*All talks will be in the Metro Ballroom**



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## Ignite NGO Sessions

In the spirit of 'Data for Social Good,' we'll hear from the NGO's themselves.

- Arnold Foundation, DonorsChoose.org, Crisis Text Line, MRDC
- MODA, Blue Engine, UN Global Pulse, DataKind, UNICEF

Tuesday Night reception at Chelsea Piers

Organized with support from Bloomberg and Datakind

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## KDD Cup



**Vlad Dubovskiy**

*DonorsChoose.org*



**William Cukierski**

*Kaggle*



**Ben Hammer**

*Kaggle*



Art



Science



Project of the Day

1. Teachers Ask
2. YOU CHOOSE
3. Students learn



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## 2014 KDD Cup Winners

1.



2.



3. **ChaoticExperiments**



- Kiran Rama

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## 2014 KDD Cup Winners

**1.**

- 



**2. DataRobot**

- Jeremy Achin, Lucas Eustaiquio, Xavier Conort



**3. ChaoticExperiments**

- Kiran Rama



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## 2014 KDD Cup Winners

### 1. 'STRAYA

- Peng, Yoon Kim



### 2. DataRobot

- Jeremy Achin, Lucas Eustaiquio, Xavier Conort



### 3. ChaoticExperiments

- Kiran Rama



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# Dissertation Award



**Huan Liu**

*Arizona State University*

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# ACM SIGKDD Doctoral Dissertation Award

## 7th annual doctoral dissertation award

- Recognize outstanding research contributions by a doctoral candidate in the field of knowledge discovery and data mining

## Nominations: 1 doctoral dissertation/academic unit

- Initial screening by departments

## 2014 Awards:

- 19 nominees
- Committee selected a winner and a runner up
- Three additional finalists selected for honorable mention

## Tuesday 8/26, 3:30 to 5:00 PM

- **Riverside Ballroom**



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## ACM SIGKDD Doctoral Dissertation Award Review Criteria

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Review      Relevance to KDD

Criteria:

---

Originality of the Main Ideas

---

Significance of Scientific Contributions

---

Broader Impact to Community

---

Technical Depth and Soundness

---

Overall Presentation and Readability

---

## 2014 SIGKDD Best Dissertation Award (Honorable Mentions)



**Mahashweta Das**

- “Exploratory Mining of Collaborative Social Content ”
- Advisor: Prof. Gautam Das, University of Texas, Dallas



**Mladen Kolar**

- “Uncovering Structure in High-Dimensions: Networks and Multi-Task Learning Problems”
- Advisor: Prof. Eric Xin, Carnegie Mellon University



**Jaewon Yang**

- “Community Structure of Large Networks”
- Advisor: Prof. Jure Leskovec, Stanford University

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# 2014 SIGKDD Best Dissertation Award (Runner Up)



## Aditya Parameswaran

- **“Human-Powered Data Management”**
- Advisor: **Prof. Hector Garcia-Molina,**  
Stanford University

## 2014 SIGKDD Best Dissertation Award



### Gunhee Kim

- “Reconstruction and Applications of Collective Storylines from Web Photo Collections”
- Advisor: **Prof. Eric Xin**, Carnegie Mellon University

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# ACM SIGKDD 2014 Service and Innovation Awards



**Gabor Melli**

*VigLink Inc.*

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# ACM SIGKDD Service Award

## In recognition of:

- significant contributions to the activities of KDD societies and conferences
- leading organizations or projects that contribute technically to the field
- furthering education of students, researchers and practitioners of KDD
- funding R&D activities of the KDD community
- volunteer services in disseminating technical information to the field, and
- contributions to society at large through applications of KDD concepts to improve global medical care, education, disaster/crisis management, environment and other such initiatives

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# SIGKDD Service Award of 2014

**FOR:**

- Substantial technical contributions to the practice and application of data mining
- Outstanding service to the global KDD community, including the re-structuring KDD's Industry and Government track
- Direct involvement in the community over the last 21 years

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- Office of the Secretary of Defense Exceptional Public Service Medal.
- AAAI's Innovative Applications Award in 1989, 1995, and 1998.
- Program co-Chair and Chair of IAAI in 1996 and 1997
- General Chair of KDD-2003
- Industry & Government Track co-Chair in 2010, 2011, and 2013.
- IAAI Program Committee member since 1993.
- Secretary-Treasurer of AAAI since 2003
- KDD-2014 Treasurer



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# 2014 SIGKDD Service Award Winner



**Ted Senator**

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# ACM SIGKDD Innovation Award

## In Recognition of:

- highest award for technical excellence in the field of KDD to one individual or one group of collaborators whose
- outstanding technical innovations in the KDD field have had a lasting impact in advancing the theory and practice of the field
- the contributions must have significantly influenced the direction of research and development of the field or transferred to practice in significant and innovative ways and/or enabled the development of commercial systems.

# KDD 2014

Data Science for Social Good

20th ACM SIGKDD Conference on Knowledge Discovery and Data Mining  
Aug 24-27 New York City



## SIGKDD Innovation Award of 2014

For:

- Foundational research in data stream analysis, cost-sensitive classification, adversarial learning, and Markov logic networks, as well as applications in viral marketing and information integration.
- Profound impact on the field of KDD through his development of new algorithms and clean formalizations of novel data mining problems, and
- Research that has paved new ways and opened many new problem areas
- Such as ...

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- Received a Ph.D. in Information and Computer Science from the University of California, Irvine, in 1997
- Is currently Professor of Computer Science and Engineering at the University of Washington.
- Authored or coauthored over 200 technical publications, several of which have received best paper awards.
- Program co-chair of KDD-03
- Associate editor of JAIR
- Co-founded the International Machine Learning Society
- Serves on the editorial board of Machine Learning.
- AAAI Fellow, and has received many previous distinctions, including an NSF CAREER Award, a Sloan Fellowship, an IBM Faculty Award, and a Fulbright Scholarship.

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**2014 SIGKDD**

**Innovation Award Winner**



**Prof. Pedro  
Domingos**

*University of  
Washington*