

# MILAN VOJNOVIĆ

## London School of Economics (LSE)

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## AREAS OF INTEREST

Data science, machine learning, optimization, distributed computing, networks

## EDUCATION

- ▷ **Ph.D., Technical Sciences**, École Polytechnique Fédérale de Lausanne, 2003  
Thesis Title: *Bits of Internet Traffic Control*, EPFL thesis no 2827  
Supervisor: Professor Jean-Yves Le Boudec
- ▷ **M.Sc. Electrical Engineering**, University of Split, Croatia, 1998
- ▷ **B.Sc. Electrical Engineering**, University of Split, Croatia, 1995

## EXPERIENCE

- ▷ **London School of Economics, Department of Statistics**  
Professor, Chair in Data Science October 2016–  
MSc in Data Science programme director
- ▷ **Microsoft Research**  
Senior Researcher March 2010–September 2016  
Researcher May 2005–March 2010  
Associate Researcher January 2004–May 2005
- ▷ **University of Cambridge, Statistical Laboratory**  
Affiliated Lecturer September 2014–June 2016
- ▷ **University of Split, Department of Computer Science**  
Visiting Professor September 2005–June 2013
- ▷ **EPFL**  
Research Assistant September 1999–June 2003
- ▷ **Bell Laboratories, Mathematical Research Center, Murray Hill, New Jersey**  
Research Intern August 2001–October 2001
- ▷ **EPFL Pre-Doctoral School in Communication Systems**  
Graduate Student September 1998–June 1999
- ▷ **University of Split**  
Graduate Student & Lecturer September 1995–June 1998

## AWARDS

- ▷ 2015 Microsoft Achievement Award
- ▷ 2010 ACM SIGMETRICS Rising Star Researcher Award
- ▷ 2007 IEEE IWQoS Best Student Paper Award
- ▷ 2005 ERCIM Cor Baayen Award
- ▷ 2005 IEEE INFOCOM Best Paper Award
- ▷ 2005 ACM SIGMETRICS Best Paper Award
- ▷ 2003 EPFL Best Ph.D. Thesis Nomination
- ▷ 2001 ITC-17 Best Student Paper Award

- ▷ 1999 EPFL Best Student Ph.D. Research Fellowship
- ▷ 1995 Best Student Award, University of Split

## PUBLICATIONS

### Books

- ▷ Vojnović M., *Contest Theory: Incentive Mechanisms and Ranking Methods*, Cambridge University Press, February 2016

More information: Amazon, Cambridge University Press

### Conference Papers and Journal Articles

- ▷ Alistarh D., Grubic D., Li J., Tomioka R. and Vojnović M., “Communication-Efficient Stochastic Gradient Descent, with Applications to Neural Networks,” Proc. of Annual Conference on Neural Information Processing Systems (NIPS) (Spotlight Session), Long Beach, CA, December 2017
- ▷ Shah V., Gulikers L., Massoulie L., and Vojnović M., Adaptive Matching for Expert Systems with Uncertain Task Types, Allerton Conference, 2017
- ▷ Vojnović M., “Contest Theory,” Communications of the ACM, May 2017
- ▷ Alistarh D., Li J., Tomioka R. and Vojnović M., “Quantized Stochastic Gradient Descent,” Proc. of the 9th NIPS Workshop on Optimisation for Machine Learning (OPT), Barcelona, Spain December 10, 2016
- ▷ Fogel F., d’Aspremont A. and Vojnović M., “Spectral Ranking using Seriation,” Journal of Machine Learning Research (JMLR), Vol. 17, No. 1, January 2016, pp 3013–3057
- ▷ Vojnović M. and Yun S., “Parameter Estimation for Generalized Thurstone Choice Models,” Proc. of the 33rd International Conference on Machine Learning (ICML), New York City, NY, USA, June 19–24, 2016, pp 498–506
- ▷ Rasley J., Karanasos K., Kandula S., Fonseca R., Vojnović M. and Rao S., “Efficient Queue Management for Cluster Scheduling,” Proc. of the 11th European Conference on Computer Systems (Eurosys), London, UK, April 18–21, 2016
- ▷ Alistarh D., Iglesias J. and Vojnović M., “Streaming Min-Max Graph Partitioning,” Proc. of Annual Conference on Neural Information Processing Systems (NIPS), Montreal, Canada, December 7–12, 2015
- ▷ Alistarh D., Gelashvili R. and Vojnović M., “Fast and Exact Majority Population Protocol,” Proceedings of the 2015 ACM Symposium on Principles on Distributed Computing (PODC), pp 47-56, Donostia-San Sebastián, Spain, July 21–23, 2015
- ▷ Alistarh D., Gelashvili R. and Vojnović M., “Lock-Free Algorithms under Stochastic Schedulers,” Proceedings of the 2015 ACM Symposium on Principles on Distributed Computing (PODC), pp 251-260, Donostia-San Sebastián, Spain, July 21–23, 2015
- ▷ Huang Z., Radunović B., Vojnović M. and Zhang Q., “Communication Complexity of Approximate Matching in Distributed Graphs,” Proceedings of the thirty-second International Symposium on Theoretical Aspects of Computer Science (STACS), pp 460-473, Garching, Germany, March 4–7, 2015
- ▷ Zong B., Gkantsidis C. and Vojnović M., “Herding Small Streaming Queries,” Proceedings of the ninth ACM International Conference on Distributed Event-Based Systems (DEBS), pp 46–57, Oslo, Norway, June 29–July 3, 2015
- ▷ Bourse F., Lelarge M. and Vojnović M., “Balanced Graph Edge Partition,” Proceedings of the twentieth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), pp 1456–1465, New York, NY, August 24–27, 2014

- ▷ Fogel F., d'Aspremont A. and Vojnović M., "SerialRank: Spectral Ranking using Seriation," Proceedings of Advances in Neural Information Processing Systems (NIPS), pp 900-908, Montreal, Canada, December 8–13, 2014
- ▷ Bachrach Y., Syrgkanis V., Tardos É. and Vojnović E., "Strong Price of Anarchy, Utility Games and Coalitional Dynamics," Proceedings of the seventh International Symposium on Algorithmic Game Theory (STAGT), pp 218–230, Haifa, Israel, September 30-October 2, 2014
- ▷ Tsourakais C. E., Gkantsidis C., Radunović B. and Vojnović M., "Fennel: Streaming Graph Partitioning for Massive Scale Graphs," Proceedings of the seventh ACM International Conference on Web Search and Data Mining (WSDM), pp 333-342, New York, NY, February 24–28, 2014
- ▷ Bachrach Y., Syrgkanis V., and Vojnović M., "Incentives and Efficiency in Uncertain Collaborative Environments," Proceedings of the ninth International Conference on Web and Internet Economics (WINE), pp 26–39, Cambridge, MA, December 11–14, 2013
- ▷ Draief M. and Vojnović M., "Convergence Speed of Binary Interval Consensus," SIAM Journal on Control and Optimization, Vol 5, No. 3, pp 1087–1109, 2012
- ▷ Jung K., Kim B. Y. and Vojnović M., "Distributed Ranking in Networks with Limited Memory and Communication," Proceedings of the 2012 IEEE International Symposium on Information Theory (ISIT), pp 980–984, Cambridge, MA, July 1–16, 2012
- ▷ Liu Z., Radunović B. and Vojnović M., "Continuous Distributed Counting for Non-Monotonic Streams," Proceedings of the thirty-first ACM Symposium on Principles of Database Systems (PODS), pp 307–318, Scottsdale, AZ, May 20–24, 2012
- ▷ Draief M. and Vojnović M., "Bargaining Dynamics in Exchange Networks," Annual Allerton Conference on Communication, Control and Computing, 2010
- ▷ Vojnović M. and Proutiere A., "Hop Limited Flooding over Dynamic Networks," Proceedings of the thirtieth IEEE International Conference on Computer Communications (INFOCOM), pp 685–693, Shanghai, China, April 10–15, 2011
- ▷ Gunawardena D., Karagiannis T., Proutiere A., Santos-Neto E. and Vojnović M., "Scoop: Decentralized and Opportunistic Multicasting of Information Streams," Proceedings of the seventeenth Annual International Conference on Mobile Computing and Networking (MOBICOM), pp 169-180, Las Vegas, Nevada, September 19–23, 2011
- ▷ Nguyen T. and Vojnović M., "Weighted Proportional Allocation," Proceedings of the 2011 ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems, pp 173–184, San Jose, CA, June 7–11, 2011
- ▷ Karagiannis T., Le Boudec J.-Y., and Vojnović M., "Power Law and Exponential Decay of Interconnect Times between Mobile Devices," IEEE Trans. on Mobile Computing, Vol. 9, No. 10, pp 1377–1390, 2010
- ▷ Vojnović M., Gupta V., Karagiannis T. and Gkantsidis C., "Sampling Strategies for Epidemic-Style Information Dissemination," IEEE/ACM Transactions on Networking, Vol. 18, No. 4, pp 1013–1025, 2010
- ▷ Hu L., Le Boudec J.-Y., and Vojnović M., "Optimal Channel Choice for Collaborative Ad-Hoc Dissemination," Proceedings of the twenty-ninth IEEE International Conference on Computer Communications (INFOCOM), pp 614–622, March 15–19, 2010
- ▷ Draief M. and Vojnović M., "Convergence Speed of Binary Interval Consensus," Proceedings of the twenty-ninth IEEE International Conference on Computer Communi-

cations (INFOCOM), pp 1792-1800, March 15–19, 2010

- ▷ Vojnović M., Cruise J., Gunawardena D. and Marbach P., “Ranking and Suggesting Popular Items,” *IEEE Trans. on Knowledge and Data Engineering*, Vol. 21, No. 8, pp 1133–1146, 2009
- ▷ Robertson S., Vojnović M. and Weber I., “Rethinking the ESP Game,” *CHI Extended Abstracts*, pp 3937–3942, 2009
- ▷ Gunawardena D., Karagiannis T., Proutiere A. and Vojnović M., “Characterizing Podcast Services: Publishing, Usage, and Dissemination,” *Proceedings of the ninth ACM SIGCOMM Internet Measurement Conference (IMC)*, pp 209–222, Chicago, Illinois, November 4–6, 2009
- ▷ Perron E., Vasudevan D. and Vojnović M., “Using Three States for Binary Consensus on Complete Graphs,” *Proceedings of the twenty-eight IEEE International Conference on Computer Communications (INFOCOM)*, pp 2527-2535, Rio de Janeiro, Brazil, April 19–25, 2009
- ▷ DiPalantino D. and Vojnović M., “Crowdsourcing and All-Pay Auctions,” *Proceedings of the tenth ACM Conference on Electronic Commerce (EC)*, pp 119–128, Stanford, California, July 6–10, 2009
- ▷ Karagiannis T. and Vojnović M., “Behavioural Profiles for Advanced Email Features,” *Proceedings of the eighteenth International Conference on World Wide Web (WWW)*, pp 711–720, Madrid, Spain, April 20–24, 2009
- ▷ Kesidis G., Hamadeh I., Jin O., Jiwasurat S. and Vojnović M., “A Model of the Spread of Randomly Scanning Internet Worms that Saturate Access Links,” *ACM Transactions on Modeling and Computer Simulation (TOMACS)*, Vol. 18, No. 2, 2008
- ▷ Massoulié L. and Vojnović M., “Coupon Replication Systems,” *IEEE/ACM Transactions on Networking*, Vol. 16, No. 3, pp 603–616, 2008
- ▷ Vojnović M. and Ganesh A. J., “On the Race of Worms, Alerts, and Patches,” *IEEE/ACM Transactions on Networking*, Vol. 16, No. 3, pp 603–616, 2008
- ▷ Suchanek F. M., Vojnović M. and Gunawardena D., “Social Tags: Meaning and Suggestions,” *Proceedings of the seventeenth ACM Conference on Information and Knowledge Management (CIKM)*, pp 223-232, Napa Valley, California, October 26–30, 2008
- ▷ Vojnović M., Gupta V., Karagiannis T. and Gkantsidis C., “Sampling Strategies for Epidemic-Style Information Dissemination,” *Proceedings of the twenty-seventh IEEE International Conference on Computer Communications (INFOCOM)*, pp 1678–1686, Phoenix, Arizona, April 13–18, 2008
- ▷ Liu S., Vojnović M. and Gunawardena D., “Competitive and Considerate Congestion Control for Bulk Data Transfers,” *Proceedings of the fifteenth IEEE International Workshop on Quality of Service (IWQoS)*, pp 1–9, Evanston, Illinois, June 21–22, 2007
- ▷ Karagiannis T., Le Boudec J.-Y. and Vojnović M., “Power Law and Exponential Decay of Inter Contact Times between Mobile Devices,” *Proceedings of the thirteenth Annual International Conference on Mobile Computing and Networking (MOBICOM)*, pp 183–194, Montreal, Canada, September 9–14, 2007
- ▷ Le Boudec J.-Y. and Vojnović M., “The Random Trip Model: Stability, Stationary Regime, and Perfect Simulation,” *IEEE/ACM Transactions on Networking*, Vol. 16, No. 6, pp 1153–1166, 2006
- ▷ Altman E., Barman D., Tuffin B. and Vojnović M., “Parallel TCP Sockets: Simple Model, Throughput and Validation,” *Proceedings of the twenty-fifth IEEE International Conference on Computer Communications, Barcelona, Spain, April 23–29, 2006*
- ▷ Gkantsidis C., Karagiannis T., Rodriguez P. and Vojnović M., “Planet Scale Soft-

ware Updates,” Proceedings of the ACM SIGCOMM 2006 Conference on Applications, Technologies, Architectures, and Protocols for Computer Communications (SIGCOMM), pp 423–434, Pisa, Italy, September 11–15, 2006

▷ Vojnović M. and Le Boudec J.-Y., “On the Long-Run Behaviour of Equation-Based Rate Control,” IEEE/ACM Transactions on Networking, Vol. 13, No. 3, pp 568–581, 2005

▷ PalChaudhuri S., Le Boudec J.-Y. and Vojnović M., “Perfect Simulations for Random Trip Mobility Models,” Proceedings of the thirty-eighth Annual Simulation Symposium, pp 72–79, San Diego, California, April 4–6, 2005

▷ Key P., Massoulié L. and Vojnović M., “Farsighted Users Harness Network Time-Diversity,” Proceedings of the twenty-fourth Annual Joint Conference of the IEEE Computer and Communications Societies (INFOCOM), pp 2383–2394, Miami, Florida, March 13–17, 2005

▷ Le Boudec J.-Y. and Vojnović M., “Perfect Simulation and Stationary of a Class of Mobility Models,” Proceedings of the twenty-fourth Annual Joint Conference of the IEEE Computer and Communications Societies (INFOCOM), pp 2743–2754, Miami, Florida, March 13–17, 2005

▷ Massoulié L. and Vojnović M., “Coupon Replication Systems,” Proceedings of the International Conference on Measurements and Modeling of Computer Systems (SIGMETRICS), pp 2–13, Banff, Canada, June 6–10, 2005

▷ Vojnović M. and Ganesh A. J., “On the Effectiveness of Automatic Patching,” Proceedings of the 2005 ACM Workshop on Rapid Malcode (WORM), pp 41–50, Fairfax, Virginia, November 11, 2005

▷ Andrews M. and Vojnović M., “Scheduling Reserved Traffic in Input-Queued Switches: New Delay Bounds via Probabilistic Techniques,” IEEE Journal on Selected Areas in Communications, Vol. 21, No. 4, pp 595–605, 2003

▷ Andrews M. and Vojnović M., “Scheduling Reserved Traffic in Input-Queued Switches: New Delay Bounds via Probabilistic Techniques,” Proceedings of the twenty-second Annual Joint Conference of the IEEE Computer and Communications Societies, San Francisco, California, March 30–April 3, 2003

▷ Vojnović M. and Le Boudec J.-Y., “Bounds for Independent Regulated Inputs Multiplexed in a Service Curve Network Element,” IEEE Transactions on Communications, Vol. 51, No. 5, pp 735–740, 2003

▷ Vojnović M. and Le Boudec J.-Y., “Stochastic Bound on Delay for Guaranteed Rate Nodes,” IEEE Communications Letters, Vol. 6, No. 10, pp 449–451, 2002

▷ Vojnović M. and Le Boudec J.-Y., “Stochastic Analysis of Some Expedited Forwarding Networks,” Proceedings of the twenty-first Annual Joint Conference of the IEEE Computer and Communication Societies (INFOCOM), New York, USA, June 23–27, 2002

▷ Vojnović M. and Le Boudec J.-Y., “On the Long-Run Behaviour of Equation-Based Rate Control,” Proceedings of the ACM SIGCOMM 2002 Conference on Applications, Technologies, Architecture, and Protocols for Computer Communication, pp 103–116, Pittsburgh, Pennsylvania, August 19–23, 2002

▷ Vojnović M. and Le Boudec J.-Y., “Bounds for Independent Regulated Inputs Multiplexed in a Service Curve Network Element,” Proceedings of the Global Telecommunications Conference (GLOBECOM), pp 1857–1861, San Antonio, Texas, November 25–29, 2001

▷ Vojnović M. and Rožić N., “An Evaluation of the ABR Explicit-Rate Allocation Interfering with the Guaranteed Services Traffic,” Computer Networks, Vol. 34, No. 1, pp

139–155, 2000

- ▷ Vojnović M., Le Boudec, J.-Y., and Boutremans C., “Global Fairness of Additive-Increase and Multiplicative-Decrease with Heterogeneous Round-Trip Times,” Proceedings of the nineteenth Annual Joint Conference of the IEEE Computer and Communication Societies (INFOCOM), pp 1303–1312, Tel Aviv, Israel, March 26–30, 2000
- ▷ Hubaux J.-P., Le Boudec J.-Y., Giordano S., Hamdi M., Blažević L., Buttyán L. and Vojnović M., “Towards Mobile Ad-Hoc WANs: Terminodes,” Proceedings of the 2000 IEEE Wireless Communications and Networking Conference (WCNC), pp 1052–1059, Chicago, Illinois, September 23–28, 2000

## **PATENTS**

- ▷ Efficient Queue Management for Cluster Scheduling, Microsoft Corporation, Redmond, WA, patent application, April 2017
- ▷ Quantized Stochastic Gradient Descent, Microsoft Corporation, Redmond, WA, patent application, May 2016
- ▷ Decentralized Relaying Algorithm for Mobile Devices, Microsoft Corporation, Redmond, WA, Patent No. 8,886,731, granted on November 11, 2014
- ▷ Allocating Tasks to Machines in Computing Clusters, Microsoft Corporation, Redmond, WA, Patent No. 9,695,009, granted on April 8, 2014
- ▷ Optimal Query Assignment: Network Load Minimization, Microsoft Corporation, Redmond, WA, Patent filed on March 3, 2014
- ▷ Ranking System, Microsoft Corporation Redmond, WA, Patent No. 8,478,762, granted on July 2, 2013
- ▷ Graph Partitioning for Massive Scale Graphs, Microsoft Corporation, Redmond, WA, Patent filed on Apr. 29, 2013
- ▷ Sampling Rules for Information Dissemination, Microsoft Corporation, Redmond, WA, Patent No. 8,081,581, granted on December 20, 2011
- ▷ Modeling of Plurality of Contests at a Crowdsourcing Node, Microsoft Corporation, Redmond, WA, Patent No. 8,195,498, granted on June 5, 2012
- ▷ Count Tracking in Distributed Environments, Microsoft Corporation, Redmond, WA, Patent filed on March 15, 2012
- ▷ Ranking and Suggesting Candidate Objects, Microsoft Corporation, Redmond, WA, Patent No. 7,685,200, granted on March 23, 2010
- ▷ Competitive and Considerate Congestion Control, Microsoft Corporation, Redmond, WA, Patent No. 7,649,841, granted on January 19, 2010

## **TECHNOLOGY TRANSFER**

### **Main Technology Transfers**

- ▷ Network Stream Optimiser, Stream Processing Platform, Bing, supporting personal digital assistant Cortana as one of main applications, 2014
- ▷ Tag Recommendation System, Microsoft Live Service, 2008
- ▷ 4CP: Background Transport Control Protocol, congestion control module of Microsoft Vista (beta), 2006

### **Consultancy, Demos and Prototypes**

- ▷ “Office Delve Recommendation System,” consultancy and working with the product team, 2015
- ▷ “On the Algorithms that Underpin our Cloud,” poster, MSR TechFest 2015, Microsoft,

Redmond, WA; with Dan Alistarh and Christos Gkantsidis

▷ “MSR Algorithms Virtual Center (VIRAL),” booth with demos, MSR TechFest 2014, Microsoft Redmond, WA; with Andrew Goldberg, Ravi Kanan, Yuval Peres, Madhu Sudan and Robert Tarjan

▷ “Streaming Partitioning for Massive-Scale Graphs,” demo, MSR TechFest 2013, Microsoft, Redmond, WA; with Christos Gkantsidis

▷ “Big Data Analytics and Infrastructure,” theme demo owner, MSR TechFest 2013, Microsoft, Redmond, WA - proposed the theme for the event, coordinated presentation of 10 demos from all across Microsoft Research

▷ “Sampling Based Methods for Range Partition,” Cosmos, Bing Infrastructure Team, 2010; with Fei Xu and Jingren Zhou

▷ “Ox: System for Large-Scale Information Dissemination in Mobile Networks,” demo, MSR TechFest 2009, Microsoft, Redmond, WA; with Thomas Karagiannis and Eliseu Santos-Neto

▷ “TagBooster: A System for Ranking and Suggesting Popular Items,” demo, MSR TechFest 2007, Microsoft, Redmond, WA; with Dinan Gunawardena

▷ “Farsighted Congestion Control,” demo, MSR TechFest 2006, Microsoft, Redmond, WA; with Peter Key and Laurent Massoulié

## PRINCIPAL LECTURES

▷ *Scalable Machine Learning for Big Data Analytics*, Invited Talk, Huawei European Research Symposium, Paris, France, January 24-25, 2018

▷ *Thurstone Choice Model Inference*, Workshop on Next Generation Network Analytics, Royal Statistical Society, January 4-5, 2018

▷ *On a Portfolio Selection Problem using Individual Test Scores*, Invited Talk, Risk & Stochastics Conference, London, April 20-21, 2017

▷ *How to Hire a Team using Individual Test Scores?*, Invited Talk, LSE Maths Seminar on Combinatorics, Games and Optimisation, LSE, London, UK, January 12, 2017

▷ *Communication Efficient Stochastic Gradient Descent*, Huawei Innovative Algorithmic and Mathematic Workshop on Next Generation Network Technology, Paris, France, November 7, 2016

▷ *Talk by an EDIC Alumnus*, Invited Talk, EDIC - Open House, EPFL, Switzerland, March 21–22, 2016

▷ *Majority Computation Problem*, Invited Keynote Talk, MSR Theory Day, Redmond, WA, USA, March 10th, 2016

▷ *On Rating Skills and Hiring a Team*, Invited Talk, Telefonica Research, Barcelona, Spain, February 26th, 2016

▷ *Utility Sharing and Social Welfare*, Invited Talk, LSE, June 11, 2015

▷ *Utility Sharing and Social Welfare*, Invited Talk, University of Cambridge, Department of Economics, UK, June 4, 2015

▷ *Talk by an EDIC Alumnus*, Invited Talk, EDIC - Open House, EPFL, Switzerland, March 20–21, 2015

▷ *A Spectral Algorithm for Ranking using Seriation*, Invited Talk, Machine Learning in Cambridge, UK, March 3, 2015

▷ *Load Balancing Tasks with Overlapping Requirements*, Invited Talk, Workshop on Community Detection at Institut Henri Poincaré, Paris, France, February 26–27, 2015

▷ *How to Divide Prize Money?*, Invited Talk, Trinity Mathematical Society, Cambridge,

UK, February 2, 2015

- ▷ *Crowdsourcing and All-Pay Auctions*, Invited Talk, Contemporary Economic Issues, University of East Anglia, Norwich, UK, November 2014
- ▷ *Consensus - A Retrospective*, Invited Talk, Workshop on Performance and Control of Large-Scale Networks, European Institute for Statistics, Probability, Stochastic Operations Research and their Applications (EURANDOM), Eindhoven, Netherlands, June–July 2014
- ▷ *Consensus - A Retrospective*, Invited Talk, University of Oxford, UK, June 2014
- ▷ *Fennel: Streaming Graph Partitioning for Massive Scale Graphs*, Invited Talk, Workshop on Big Dynamic Distributed Data, VLDB 2013, Trento, Italy, 2013
- ▷ *Balanced Graph Partitioning for Massive Scale Computations*, Invited Talk, LIDS Seminar, MIT, Cambridge, MA, USA, December 2013
- ▷ *Balanced Graph Partitioning for Massive Scale Computations*, Invited Talk, University of Warwick, UK, December 2013
- ▷ *Cooperation and Efficiency in Utility Maximization Games*, Invited Talk, Microsoft Research, Silicon Valley, Theory Seminar, October 2013
- ▷ *Efficiency and Redistribution of Welfare*, Invited Talk, Hamilton Institute, Ireland, February 2013
- ▷ *Continuous Distributed Counting for Non-Monotonic Streams*, Invited Talk, INTIMATE “Big Data In Digital Life” workshop, organised by C. Diot, S. Fdida, J. Kurose and P. Rodriguez, June 20–21, Paris, France
- ▷ *Some Maths of Use in the Computer Systems World*, Invited Talk, Cambridge Centre for Analysis, University of Cambridge, October 2012
- ▷ *Consensus*, Invited Talk, Lecture Series Algorithms and Complexity in Durham, University of Durham, Durham, UK, October 2012
- ▷ *Sampling Based Range Partition Methods for Big Data Analytics*, Invited Talk, IN-QUEST Workshop, organised by M. Benedikt and D. Oletanu, University of Oxford, UK, September 2012
- ▷ *Continuous Count Tracking for Distributed Non-Monotonic Streams*, Invited Talk, NI Shonan Meeting: Large-Scale Distributed Computation, organised by G. Cormode, S. Mutukrishnan and K. Yi, Shonan, Japan, January 2012
- ▷ *Continuous Count Tracking for Distributed Non-Monotonic Streams*, Invited Talk, Tokyo University of Technology, Japan, January 2012
- ▷ *Revenue of Auctions: Truthful vs. Non-Truthful Designs*, Invited Talk, Session: New Directions in Stochastic Games chaired by Alexandre Proutiere and Ramesh Johari, INFORMS, Stockholm, Sweden, July 2011
- ▷ *Weighted Proportional Allocation*, Invited Talk, Microsoft Research Asia, Beijing, China 2011
- ▷ *Mechanism Design*, Invited Talk, Summer Research Institute, EPFL, Switzerland, June 2011
- ▷ *Computer Systems seen as Auctions*, Keynote Talk, ACM Sigmetrics 2010, New York City, NY, USA, June 14–18, 2010
- ▷ *Mechanism Design*, Tutorial, Series: Microsoft Research Tutorial, Cambridge, UK, March 2010
- ▷ *Bargaining Dynamics in Exchange networks*, Invited Talk, Allerton, IL, USA, September 2010
- ▷ *Weighted Proportional Allocation*, Invited Talk, University of Cambridge, UK, 2010



- ▷ *Weighted Proportional Allocation*, Invited Talk, Harvard University, MA, USA, 2009
- ▷ *Crowdsourcing and All-Pay Auctions*, Invited Talk, University of California Berkeley, CA, USA, July 2009
- ▷ *Crowdsourcing and All-Pay Auctions*, Invited Talk, Statslab Networks Seminar, University of Cambridge, UK, May 2009
- ▷ *Binary Consensus Using Three States on Complete Graphs*, Invited Talk, Epidemic Spreading and Networks, The Institute of Mathematical Sciences, Imperial College, London, UK, October 2008
- ▷ *Consensus with Limited Memory and Signaling*, Invited Talk, Statslab, University of Cambridge, UK, 2008
- ▷ *Consensus with Limited Memory and Signaling*, Invited Talk, NET-COOP 2008, Paris, France
- ▷ *Social Networks Overview*, Invited Talk, Unilever Spark Workshop, Norwich, United Kingdom, 2008
- ▷ *Tagging done by YOU*, Tutorial, Series: Microsoft Research Tutorial, Cambridge, UK, 2008
- ▷ *Power Law and Exponential Decay-Mobile Devices*, Invited Talk, Hynet Colloquium, University of Maryland, MD, USA, 2007
- ▷ *Ranking and Suggesting Popular Items*, Invited Talk, Workshop on Mathematics of Communication Networks, ENS, Paris, France, 2007
- ▷ *Ranking and Suggesting Popular Items*, Invited Talk, INFORMS, Eindhoven, Netherlands, 2007
- ▷ *Coupon Replication Systems*, Invited Talk, INFORMS, Pittsburgh, PA, USA, 2006
- ▷ *Random Trip Model*, Three Lecture Mini-Course, Charles University Prague, Czech Republic, 2006
- ▷ *Farsighted Congestion Control*, Invited Talk, CSAIL, MIT, Cambridge, MA, USA, 2005
- ▷ *Planet Scale Software Updates*, Invited Talk, Microsoft Research, Redmond, WA, USA, 2005
- ▷ *Planet Scale Software Updates*, Invited Talk, TU Munich, Germany, 2005
- ▷ *Random Trip Model*, Invited Talk, Max Plank Institute fur Informatik, Saarbrucken, Germany, 2005
- ▷ *Random Trip Mobility Models*, Tutorial, ACM Mobicom 2006, with Jean-Yves Le Boudec, Los Angeles, CA, USA
- ▷ *Software Updates*, Tutorial, IFIP Performance 2005, with Ayalvadi Ganesh, Juan-les-Pins, France, 2005
- ▷ *Coupon Replication Systems*, Invited Talk, EPFL Summer Research Institute, Switzerland, 2004
- ▷ *Random Trip Model*, Invited Talk, University of Cambridge, UK, 2004
- ▷ *Farsighted Congestion Control*, Invited Talk, ARC-TCP Workshop, INRIA, Sophia-Antipolis, France, 2004
- ▷ *Equation-Based Rate Control*, Invited Talk, IPAM Workshop on Large Scale Communication Networks: Topology, Routing, Traffic and Control, organised by D. Donoho, J. Doyle, F. P. Kelly, and W. Willinger, UCLA, Los Angeles, CA, USA, March 18–22, 2002
- ▷ *Equation-Based Rate Control*, Invited Talk, Columbia University, New York City, NY, USA, 2001
- ▷ *Equation-Based Rate Control*, Invited Talk, University of Massachusetts at Amherst,

## **COURSES TAUGHT**

MA, USA, 2001

- ▷ AI and Deep Learning, MSc in Data Science, LSE, lecturer, 2018/19
- ▷ ST446 Distributed Computing for Big Data, MSc in Data Science, LSE, lecturer, 2017/18
- ▷ ST445 Managing and Visualising Data, MSc in Data Science, LSE, lecturer, 2017/18
- ▷ ST498 Capstone Project, MSc in Data Science, LSE, organiser and supervisor, 2017/18; company partners include Facebook, Google, Microsoft, Microsoft Research, Proximity London, Tesco and two LSE departments, namely, Department of Government and Student Services
- ▷ Contest Theory, Lent Term, Part III of the Mathematical Tripos, University of Cambridge, lecturer, 2013–2015
- ▷ Networked Systems Architecture, University of Split, undergraduate study in computer science, lecturer, 2005–2013
- ▷ Performance Evaluation, EPFL, master program, teaching assistant, 2002
- ▷ Computer Networking, EPFL, undergraduate studies, teaching assistant, 2001
- ▷ Java Programming, EPFL, undergraduate studies, 2000
- ▷ Analogue and Digital Circuits, University of Split, undergraduate studies in electrical engineering, laboratory and theoretical problem solving exercises, 1995–1998
- ▷ Antennas and Propagation, University of Split, undergraduate studies in electrical engineering, laboratory and theoretical problem solving exercises, 1995–1998
- ▷ Numerical Methods in Electronics, University of Split, undergraduate studies in electrical engineering, laboratory and theoretical problem solving exercises, 1995–1998

## **SUPERVISIONS**

### **Ph.D. Thesis advisor**

- ▷ Yiliu Wang, LSE, 2018-
- ▷ Kaifang Zhou, LSE, 2017-

### **Ph.D. Thesis committee member**

- ▷ Lucas Maystre, Efficient Learning from Comparisons, EPFL, Lausanne, Switzerland, April 2018
- ▷ Remi Varloot, Dynamic Network Formation, École Normale Supérieure, Paris, France, June 2018
- ▷ Fajwel Fogel, Convex and Spectral Relaxations for Phase Retrieval, Seriation and Ranking, École Polytechnique, Paris, France, September 2015
- ▷ Michal Ficek, Tracking Users in Mobile Networks: Data Acquisition Methods and their Limits, Czech Technical University in Prague, Czech Republic, June 2013

### **Post-docs**

- ▷ Konstantin Kutzkov, 2018-
- ▷ Virag Shah, University of Texas at Austin, 2016–2017
- ▷ Se-Young Yun, KAIST, 2015–2016, was a post-doc with Los Alamos National Laboratory, Los Alamos, New Mexico, now an Assistant Professor at KAIST
- ▷ Dan Alistarh, EPFL, 2014–2015, was a Researcher with MSR, now an Assistant Professor at ETH Zurich

## **Interns**

- ▷ Remi Jezequel, École Normale Supérieure, 2017
- ▷ Lucas Maystre, EPFL, 2016
- ▷ Jerry Li, MIT, 2016
- ▷ Hyun Jik Kim, University of Cambridge, 2015, now Ph.D. student at Oxford University
- ▷ Gautam Kamath, MIT, 2015
- ▷ Fajwel Fogel, École Normale Supérieure, 2014, now a lead scientist at Kayrros
- ▷ Rati Gelashvili, MIT, 2014
- ▷ Jennifer Iglesias, CMU, 2014
- ▷ Florian Bourse, École Normale Supérieure, 2013
- ▷ Nan Li, University of Santa Barbara, 2013, was with oDesk, then Apple, now with Facebook
- ▷ Bo Zong, University of Santa Barbara, 2013, now with NEC Laboratories America
- ▷ Charalampos Tsourakakis, CMU, 2012, was a post-doc at Harvard University, now an Assistant Professor at the University of Boston ▷ Alan Roytman, UCLA, 2012
- ▷ Zengfeng Huang, Hong Kong University of Science and Technology, 2012, was a post-doc with MADALGO, Denmark, now a Research Fellow at CSE, UNSW
- ▷ Zhenming Liu, Harvard University, 2011, was with Two Sigma, now an Assistant Professor at the College of William and Mary
- ▷ Vasilis Syrgkanis, Cornell University, 2011, now with Microsoft Research
- ▷ Jinshan Zhang, University of Liverpool, UK, 2011
- ▷ Amin Karabasi, EPFL, 2010, was a post-doc at ETHZ, now an Assistant Professor at Yale University
- ▷ Thanh Nguyen, Cornell University, 2009, now an Assistant Professor at Purdue University
- ▷ Dominic DiPalantino, Stanford University, 2008, was with Google, now with Twitter
- ▷ Elizeu Santos-Neto, University of British Columbia, 2008, now with Google
- ▷ Dinkar Vasudevan, EPFL, 2008, now with a wireless communications company in Bristol, UK
- ▷ Fabian Suchanek, MPI, 2007, was a Visiting Researcher at Microsoft Research, then a post-doc at INRIA Sacle, leader of an MPI group, now an Associate Professor at Télécom ParisTech University, Paris, France
- ▷ James Cruise, University of Cambridge, 2007, now a lecturer at Heriot-Watt University, Edinburgh, United Kingdom
- ▷ Varun Gupta, CMU, 2006, now an Assistant Professor at Chicago Business School
- ▷ Thomas Karagiannis, University of Riverside, 2006 now with Microsoft Research
- ▷ Shao Liu, UIUC, 2005, now with Microsoft

## **Part III Master Program Essays**

- ▷ Aya Ahmed, “Allocating Tasks to Workers in Crowdsourcing Services,” 2015
- ▷ Adam Chudziak, “Statistical Inference and Optimal Auction Design,” 2015
- ▷ Benjamin Dubois, “Fair Allocation of Multi-Type Resources,” 2015

- ▷ Fikri Pitsuwan, “Statistical Inference and Optimal Auction Design,” 2015
- ▷ George Bignall, “Tug of War,” 2014

**PROFESSIONAL SERVICE      Program Committee Activities**

- ▷ Advisory board member, Data for Policy 2018 - Digital Trust and Personal Data
- ▷ Area vice-chair for Distributed, Parallel and P2P Data Management, IEEE ICDE 2019
- ▷ Chair, Workshop on Data Science Theory and Practice, LSE, London, March 27-28, 2018; invited speakers from academia, industrial research laboratories and industry
- ▷ Member, Performance 2018
- ▷ Member, Program Committee, ACM SIGMETRICS 2017
- ▷ Member, Program Committee, ACM SIGMETRICS 2016
- ▷ Member, Program Committee, ACM SIGMETRICS 2015
- ▷ Chair, Workshop on Algorithms and Data Science, Microsoft Research, Cambridge, UK, May 15, 2014; keynote speaker: Robert Tarjan
- ▷ Chair, Workshop on Big Data Analytics, Microsoft Research, Cambridge, UK, May 23-24, 2013; co-organised with Artur Czumaj and Jingren Zhou; keynote speakers: Surajit Chaudhuri, Sanjeev Khanna, and Gerhard Weikum
- ▷ Member, Program Committee, ACM SIGMETRICS 2014
- ▷ Member, Program Committee, ACM SIGMETRICS 2013
- ▷ Member, External Review Committee—Cloud Computing and Next-Generation Distributed Query Processing, ACM SIGMOD 2013
- ▷ Member, Program Committee, ACM SIGMETRICS 2012
- ▷ Member, Program Committee, ACM Electronic Commerce 2011
- ▷ Member, Program Committee, IFIP Performance 2011
- ▷ Member, Program Committee, ACM SIGMETRICS 2011
- ▷ Member, Program Committee, WWW 2011
- ▷ Member, Program Committee, IEEE INFOCOM 2011
- ▷ Chair, Workshop on the Economics of Networks, Systems, and Computation (NETECON), 2010; co-organised with Mike Dahlin
- ▷ Chair, Workshop on the Future of Social Networking: Experts from Industry and Academia, Cambridge, UK, Nov 18th, 2010; co-organized with Jon Crowcroft, Pietro Lio, Neil Walton, and Eiko Yoneki
- ▷ Member, Program Committee, IEEE INFOCOM 2010
- ▷ Member, Program Committee, WWW 2010
- ▷ Member, Program Committee, IEEE INFOCOM 2009
- ▷ Member, Program Committee, WWW 2009
- ▷ Member, Program Committee, IEEE INFOCOM 2008
- ▷ Chair, Workshop on Online Social Networks, Microsoft Research, Cambridge, UK, 2007; co-organised with Thomas Karagiannis, Peter Key, and Bala Krishnamurthy
- ▷ Member, Program Committee, IEEE INFOCOM 2007
- ▷ Member, Program Committee, ACM SIGCOMM 2007
- ▷ Member, Program Committee, IEEE INFOCOM 2006

- ▷ Chair, InterPerf 2006, ValueTools 2006; co-organised with Sean Collins

### **Steering Committees**

- ▷ Workshop on the Economics of Networks, Systems and Computation (NetEcon), 2008–
- ▷ Workshop on Online Social Networks (WOSN), 2008–2011
- ▷ Incentive-Based Computing (IBC), 2006

### **Other Panels**

- ▷ Member, Senior Leadership Team, Microsoft Research Algorithms Virtual Center (VIRAL), 2013-2016; other members included Nikhil Devanur, Andrew Goldberg, Ravi Kannan, Robert Kleinberg, Thomas Moscibroda, Yuval Peres, Robert Schapire, Madhu Sudan and Robert Tarjan
- ▷ Expert evaluator, Horizon 2020, European Commission, Brussels, Belgium, June 4-13, 2018
- ▷ Expert evaluator, Horizon 2020, European Commission, Brussels, Belgium, June 12-22, 2017
- ▷ Expert evaluator, INRIA projects under the theme “Networks and Telecommunications,” March 22–24, 2016, Paris, France
- ▷ Expert evaluator, FP7, European Commission, Brussels, Belgium, December 7–11, 2009

## **OTHER ACTIVITIES**

### **Lecture Series Organised**

- ▷ Lecture series: *Big Data Analytics*, MSR, Cambridge, UK, 2012. Speakers: Graham Cormode (AT&T Research), Tugkan Batu (LSE), Ely Porat (Bar-Ilan University), Tom Friedetzky (Durham University), Alexandre d’Aspremont (Ecole Polytechnique, Paris), Nicolò Cesa-Bianchi (University of Milan) and Michael Benedikt (Oxford University)
- ▷ Lecture series: *Algorithms and Economics*, MSR, Cambridge, UK, 2011. Speakers: Kostas Bimpikis (Microsoft Research, New England), Paul Goldberg (University of Liverpool), Michael Kearns (University of Pennsylvania), Robert Mătaescu (Microsoft Research), Romans Panco (University of Rochester), Harald Räeche (University of Warwick), Peyton Young (University of Oxford), Jenn Wortman Vaughan (UCLA), Richard Weber (University of Cambridge)