Joel Oren

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Areas of interest

- Stochastic processes in social networks. In particular, large-scale data-driven techniques for modeling processes of influence diffusion in social networks.
- Distributed and parallel algorithms for massive data sets, with a focus on network data.
- Game theory and social choice theory: mechanism design, voting theory.

Education

- **Ph.D** – Department of Computer Science, University of Toronto, member of the Theory group and the Knowledge Representation group. **Supervisors**: Prof. Allan Borodin and Prof. Craig Boutilier. 03/2011 – 11/2015
  Thesis title: Multi-Winner Social Choice: Algorithmic and Game-Theoretic Approaches. GPA: 4.0
- **M.Sc** – Computer Science, University of Toronto, Finished in 03/2011
- Member of the theory group at the Department of Computer Science. Conducting research under the supervision of Prof. Allan Borodin.
  Research topic: stochastic models of influence diffusion in social networks with game-theoretic applications. GPA: 4.0
- **B.Sc** – Computer Science, Ben Gurion University. Finishing with honours, with an average of 92/100 – At the top 5% of my class. Finished in July 2008

Professional Experience

- **Currently:** Research scientist at Wattpad.com: Algorithm design, machine learning research and recommendation systems. Large-scale computation in Spark and Hadoop. Data-driven analytics of user behavior, text analysis, and social interactions.

- **Research internships:**
  - **Microsoft Research, Cambridge, UK** – February 2013 – April 2013. Research in all-pay auction (involved data analysis in Matlab, crowdsourcing through Mechanical Turk), theoretical research in cooperative game theory.
  - Research intern**, Thoora Inc**., Toronto, ON - April 2011 – August 2011 (MITACS Accelerate Program for Canadian graduate students). Research in the area of recommendation systems for personalized content in social networks, algorithms for combinatorial optimization of information retrieval problems.
- **Teaching experience:**
  - **Course instructor:** *Social and Economic Networks* (Winter term, 2015) – an undergraduate level course on social networks on topics such as structural properties of social networks, related game theoretic models, auctions, etc. (course code: CSC200).
  - **Teaching assistant at The University of Toronto** – Introduction to Programming (CSC108, one term), introduction to data structures (CSC263, one term), Social and Economic Networks (CSC200, three terms), Algorithm Design (CSC373, five terms).

- Private tutoring – **Ben-Gurion University** (Israel) 2006-2007 – Tutored students with learning disabilities and other special needs. Gave private tutorials in various areas of Computer Science and Mathematics for students with learning disabilities. Worked under the supervision of the Dean's office.

Service in academia:

- Program committee member in: WSDM'2015, IJCA'2016, EXPLORE'2015.
- Conference and paper reviewing: STOC, EC, ITCS, SODA, ESA, JAAMAS, WINE, COLT, COMSOC, FUN.

- **Volunteering**:
  - Organizer of the theory student seminar.
  - Organizing the student seminar on algorithmic game theory.
  - Student Volunteer-student at AAAI2012.
  - Website manager of the Knowledge Representation group (University of Toronto).

Refereed Publications

- Influence at Scale: Distributed Computation of Complex Contagion in Networks – with Brendan Lucier and Yaron Singer. Appeared at **KDD'2015**. Acceptance rate: %19.
- The Pricing War Continues: On Competitive Multi-Item Pricing – with Omer Lev, Craig Boutilier, and Jeffrey S. Rosenschein. Appeared at **AAAI'2015**.
- A Game-theoretic Analysis of Catalog Optimization - with Nina Narodytska, and Craig Boutilier. Appeared at **AAAI'2014**.
- Online Budgeted Social Choice - with Brendan Lucier. Appeared at **AAAI'2014**.
- Robust winners and winner determination policies under candidate uncertainty – with Craig Boutilier, Jerome Lang, and Hector Palacios. Appeared at AAAI2014. Preliminary version presented at **COMSOC'2012**.
- Efficient Voting via The Top-k Elicitation Scheme: A Probabilistic Approach – with Yuval Filmus. Appeared at **EC'2014**.
- Efficient Vote Elicitation under Candidate Uncertainty - with Yuval Filmus and Craig Boutilier. Appeared at **IJCAI'2013**.
- Truthful Mechanisms for Competing Submodular Processes - with Allan Borodin, Mark Braverman, and Brendan Lucier. Appeared at **WWW'2013**.
- Threshold Models for Competitive Influence in Social Networks - with Allan Borodin, and Yuval Filmus. Appeared at **WINE'2010**.

Invited Talks

- Guest lecture: Social Data-Mining, Harvard University (a graduate level course).
- Poster presentation at AAAI'2015 for the paper: The Pricing War Continues: On Competitive Multi-Item Pricing.
- Efficient Voting via The Top-k Elicitation Scheme: A Probabilistic Approach – MSR UK.
- A Game-theoretic Analysis of Catalog Optimization – AAAI'2014.
- Robust winners and winner determination policies under candidate uncertainty – AAAI'2014.
- Online Budgeted Social Choice – AAAI'2014.
- Efficient Vote Elicitation under Candidate Uncertainty –IJCAI'2013.
- Truthful Mechanisms for Competing Submodular Processes – WWW2013
- Online (Budgeted) Social Choice - COMSOC 2012 (Computational social choice), Krakow, Poland.

- The First Cambridge Computation and Economics Day (2012) – Presented a poster: Truthful Mechanisms for Competing Submodular Processes.
- Truthful Mechanisms for Competing Submodular Processes – Microsoft Research, Hertzeliya, Israel, August 25th, 2011.
- Threshold Models for Competitive Influence in Social Networks – WINE 2010, Stanford University.
- Threshold Models for Competitive Influence in Social Networks – WINE 2010, Stanford University, California.

Awards

- The Ray Reiter Award 2015 (departmental award).
- The Google-Lime Scholarship 2012.
- The Ontario Graduate Scholarship – 2010-2011, 2011-2012, 2013-2014.
- The Suzanne Zlotowski award for undergraduate students with exceptional admission merits – 2003.

Experience in the industry:

- Backend Software Engineer, **Superderivatives Inc.**, Israel - Oct. 2008 – Dec. 2008.
- Systems Software engineer, **LucidLogix Information Technology** - Aug. 2007- Aug. 2008. Have been involved in developing software simulations of various GPU processes, low-level programming in an FPGA environment, and device driver development.

Technical Skills

Programming languages: Python, Scala, C/C++, Java, Matlab, Mathematica, PHP.
Programming frameworks: Apache Spark, Scientific computing in Python (NumPy, SciPy,Pandas, ScikitLearn), MapReduce/Hadoop, RStudio, Amazon's web services (AWS), relational database languages (SQL, PostgreSQL, Redshift, Apache Hive).

Language Skills:

- English: Native speaker.
- Hebrew: Native speaker.
- Spanish: Fluent.