

# Kirill Dyagilev

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## Summary

I am a postdoctoral fellow with the Department of Computer Science at Johns Hopkins University, where I apply my passion for Machine Learning and Data Science to medical data sets. Prior to that, I obtained my PhD from the Electrical Engineering Department at Technion – Israel Institute of Technology. I have an excellent academic track record and years of experience as a part-time researcher with IBM and Microsoft. My interests lie in solving challenging problems in data-rich environments. I bring to the table my practical experience in working with big data and my knowledge of machine learning techniques.

## Education

All of my degrees are from Technion – Israel Institute of Technology:

- **Ph.D.**, Electrical Engineering, 2014  
Research areas: network formation games, machine learning in big data
- **M.Sc.**, summa cum laude, Electrical Engineering, 2009  
Research areas: reinforcement learning
- **B.Sc.**, summa cum laude, Computer Engineering, 2003

## Research Experience

**Department of Computer Science, Johns Hopkins University, Postdoctoral Fellow**  
2014-Present

I developed, in collaboration with Prof. S. Saria, a novel ranking-based framework for automated scalable learning of disease severity scores. This project resulted in one poster presentation, one frontal presentation, and one journal paper.

Currently, I lead an interdisciplinary project that aims to leverage temporal information captured by medical billing claims to predict a patient's risk for future hospitalization. Our current method builds on non-negative matrix factorization techniques. Collaborators on this project include Prof. S. Saria (Dept. of Computer Science) and Prof. H. Kharazi and Prof. J. Weiner (Johns Hopkins School of Public Health).

### **Microsoft Research Israel, PhD Research Intern**

March-June 2013

I investigated linguistic factors associated with propagation of political information in Twitter. This project was done in collaboration with Dr. E. Yom-Tov and resulted in one journal paper.

### **IBM Research Lab Israel, Machine Learning Group, PhD Research Intern**

2009-2012

I analyzed large-scale mobile call data to identify social factors associated with the decision of a customer to churn, i.e., to transfer to another mobile phone provider. I then leveraged these factors to develop an efficient regression tree based churn predictor. This project was done in collaboration with Dr. E. Yom-Tov and resulted in one patent and several scientific publications.

**Research Experience (cont.)**

**IBM Research Lab Israel, Analog and Mixed Signal Group, Part-time Engineer**  
2003-2007

I implemented major parts of an automatic design tool for analog circuits. The project resulted in patented technology and a product used internally at IBM.

Languages used: SKILL (an internal automation language of the Cadence design environment).

**IBM Research Lab Israel, Analog and Mixed Signal Group, Undergraduate Intern**  
2000-2003

I assisted in the design of several basic analog circuits in the Cadence design environment.

**Programming Skills**

C/C++, Matlab, R, sed, Perl, Python, and IBM's parallel machine learning kit.

**Selected Publications**

Dyagilev K. and Saria S., "Learning (predictive) risk scores in the presence of censoring due to interventions", *Machine Learning, Special Issue on Machine Learning for Health and Medicine*, 2015.

Dyagilev K. and Saria S., "Learning a Severity Score for Sepsis: A Novel Approach based on Clinical Comparisons", *American Medical Informatics Association*, 2015.

Dyagilev K. and Yom-Tov E. "Linguistic Factors Associated with Propagation of Political Opinions in Twitter". *Social Science Computer Review*, 2014.

Dyagilev K., Mannor S. and Yom-Tov E. "On Information Propagation in Mobile Call Networks". *Journal of Social Networks Analysis and Mining*, 2013.

E. Arcaute, Dyagilev K., Johari R. and Mannor S. "Dynamics in Tree Formation Games". *Journal of Games and Economic Behavior*, 2013.

Dyagilev K., Mannor S. and Shimkin N. "Efficient Reinforcement Learning in Parameterized Models: Discrete Parameter Case." *European Workshop on Reinforcement Learning*, 2008.

**Patents**

Dyagilev K., Richter Y., Ronen A., Yom-Tov E. "Statistical analysis of data records for automatic determination of activity of non-customers", IBM corp., 2010.

Berger I., Dyagilev K., Ramm D., Sheinman B., Shlomo O. "Automated migration of analog and mixed-signal VLSI design", IBM corp., 2008.

**Graduate Course Work**

- Machine learning, including advanced courses on pattern recognition and online learning.
- Game theory, in general, and network formation games, in particular.
- Probability and stochastic processes; convex optimization, and reinforcement learning.

**Miscellaneous Skills**

Excellent teaching skills (served as a teaching assistant and a lecturer/instructor for several college-level courses, won teaching excellence prize). Proven record of self-learning abilities.

**Languages**

Fluent in English, Russian, and Hebrew.