Konstantin Bauman, Ph.D.

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Research Interests

Machine learning, data mining, text processing, sentiment analysis, recommender systems, aspect based recommendations, user reviews, educational data mining, predicting student performance, randomized control experiments, technology enhanced learning.

Education

Ph.D. in Mathematics **2012**
Department of Mathematics,
Lomonosov Moscow State University, Russia

M.S. in Data Mining **2009**
Moscow Institute of Physics and Technology, Russia
School of Data Analysis, Yandex

M.S. in Mathematics **2008**
Department of Mathematics,
Lomonosov Moscow State University, Russia

Professional Experience

NYU Leonard N. Stern School of Business, New York, NY **2013 – present**
Department of Information, Operations and Management Sciences
Research Scientist

Yandex, Moscow, Russia
Head of Human Machine Learning Group **2011 – 2013**
Software Developer **2008 – 2011**

- Implemented new factors into the gender-age-income prediction model;
- Performed clustering of users by their search behavior for the purpose of personalization search results;
- Developed a new algorithm of CTR prediction that led to 2% growth of revenue from advertising.

Russian Academy of Foreign Trade, Moscow, Russia **2007 – 2008**
Software Developer

- Developed a course faculty evaluation system.

Rutgers University, DIMACS, Piscataway, NJ **2007**
Visiting Researcher

- Area: Computational and Mathematical Epidemiology/DyDAn

Teaching Experience

Dealing with Data (INFO UB.0046.01): *Instructor,* Rating: 5.2/7.0, Enrollment: 36; **Spring 2015**
IOMS Department, Stern School of Business, New York University, New York

Publications

Journal Submissions

- "Recommending Remedial Learning Materials to the Students by Filling their Knowledge Gaps" with Tuzhilin A., under 3rd round of reviews at Management Information Systems Quarterly (MISQ), Minor Revision.
- "Using Social Sensors for Detecting Emergency Events: A Case of Power Outages in the Electrical Utility Industry," with Tuzhilin A., Zaczynski R., under review in ACM Transactions on Management Information Systems (TMIS).

Selected Working Papers

- "Recommending Items with Conditions Enhancing User Experiences Based on Sentiment Analysis of Reviews" with Liu B., Tuzhilin A.
- "Discovering Contextual Information from User Reviews for Recommendation Purposes" with Tuzhilin A.
- "Recommending Next Learning Activity for Optimizing the Student's Probability of Solving all Problems in the Course" with P. Brusilovsky, S. Sahebi, Tuzhilin A.

Journal Publications

- "Lower estimate of the square-to-linear ratio for regular Peano curves," Discrete Mathematics and Applications, vol 24 (3), pp 123–128, 2014.
- "Optimization of Click-through Rate Prediction in the Yandex Search Engine," (with Kornetova A., Topinskii V., Khakimova D.), Automatic Documentation and Mathematical Linguistics, 47 (2), 52–58, 2013.
- "One-side Peano Curves Fractal Genius 9," Proceedings of the Steklov Institute of Mathematics Russian Academy of Sciences, vol 275 (1), pp 47–59, 2011.
- "Minimal Peano Curve," (with Shchepin E.), Proceedings of the Steklov Institute of Mathematics Russian Academy of Sciences, vol 263 (1), pp 236–256, 2008.
- "The Dilation Factor of the Peano-Hilbert Curve," Mathematical Notes, 80 (5), 609-620, 2006.

Conference Publications

- "Recommending Items with Conditions Enhancing User Experiences Based on Sentiment Analysis of Reviews" (with Liu B., Tuzhilin A.) Content-based Recommender Systems (CBRecSys), Boston, 2016.
- "Recommending Remedial Learning Materials to the Students by Filling their Knowledge Gaps," (with Tuzhilin A.), Workshop on Educational Recommender Systems (EdRecSys), Omaha, NE, 2016.
- "Using Social Sensors for Detecting Power Outages in the Electrical Utility Industry," (with Tuzhilin A., Zaczynski R.), Workshop on Information Technologies and Systems (WITS), Dallas, TX, 2015
- "Estimating customer reviews in recommender systems using sentiment analysis methods," (with Liu B., Tuzhilin A.), Conference on Information Systems and Technology (CIST), Philadelphia PA, 2015
- "Discovering Contextual Information from User Reviews for Recommendation Purposes," (with Tuzhilin A.), New Trends in Content-based Recommender Systems (CBRecSys), Foster City, CA, 2014.

- "Recommending Learning Materials to Students by Identifying their Knowledge Gaps," (with Tuzhilin A.), Poster Proceedings of Recommender Systems conference (RecSys), Foster City, CA, 2014.
- "Clustering Sequence of Micro-blog Messages and Study of its Applicability for Detecting New Events," (with Suvorikova A.), Intellectualization of Information Processing, Budva, Montenegro, 2012.
- "In Search of Minimal Peano Curve," Topology, Geometry and Dynamics: Rokhlin Memorial Conference, Saint Petersburg, Russia, 2010.
- "CTR Prediction Based on Click Statistics," (with Kornetova A., Topinskii V.), Machine Learning in Online Advertising (MLOAd), Vancouver, Canada, 2010.
- "Minimal Peano Curve," 24th Conference on Topology and its Applications, Brno, Czech Republic, 2009.
- "Central-Symmetric Polytopes with Minimum Number of Faces," Proceedings of IX international seminar "Discrete Mathematics and It's Applications," Moscow, Russia, 2007.

Selected Awards

- Gold medal in Mathematics from the Russian Academy of Science **2007**
  for the work "The Dilation Factor of the Peano-Hilbert Curve"
- First place in the International Science and Engineering Fair, (ISEF), Moscow, Russia **2003**
  for the work "The Estimation of Square-to-Linear Ratio of the Peano Curve"
- First place in the International Science Conference "Kolmogorov readings" , Moscow, Russia **2003**
  for the work "Square-to-Linear Ratio of the Peano Curve"

Professional Service

Reviewer

- ACM Transactions on Information Systems (TOIS), Pervasive and Mobile Computing Journal (PMC), The ACM Conference on Recommender Systems (RecSys), Neural Information Processing Systems (NIPS), Track on Recommender Systems: Theory and Applications (RS)

Website administrator

- ACM Transactions on Management Information Systems (TMIS)

Professional Memberships

- INFORMS, Association for Computing Machinery (ACM)

Professional Certificates

Teaching

- Fundamentals of Teaching, NYU School of Medicine, 2015

Project Management

- Essentials of Project Management, Project Management Institute, 2015
- Managing Multiple Projects, Project Management Institute, 2016