

Natallia V. Katenka

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Education and Degrees

- **Ph.D. in Statistics**, The University of Michigan, Ann Arbor, 09/2004- (expected 04/2009)
- **M.A. in Statistics**, The University of Michigan, Ann Arbor, 2007
- **M.S. in Applied Mathematics and Computer Science**, Belarusian State University, Minsk, Belarus, 2004
- **B.S. in Applied Mathematics and Computer Science**, Belarusian State University, Minsk, Belarus, 2003

Research Interests

- Statistical Inference on Network Data (Wireless Sensor Networks: Target Detection and Localization, Multi-Target Tracking and Diagnostics, Network Structure and Design)
- Multivariate and Functional Data Analysis
- Spatio-Temporal Modeling.

Publications

[1] Katenka, N., Levina, E., and Michailidis, G. (2008), “Local Vote Decision Fusion for Target Detection in Wireless Sensor Networks,” *IEEE Transactions on Signal Processing*, 56, 329-338.

[2] Katenka, N., Levina, E., and Michailidis, G. (2008), “Robust Target Localization from Binary Decisions in Wireless Sensor Networks,” *Technometrics*, 50, in press.

[3] Katenka, N., Levina, E., and Michailidis, G. (2008), “Tracking Multiple Targets Using Binary Decisions from Wireless Sensor Networks,” Technical Report 479, Department of Statistics, The University of Michigan. Submitted to the *Journal of the American Statistical Association (JASA) Applications and Case Studies*.

[4] Katenka, N., Levina, E., and Michailidis, G. (2007), “A Cost-Efficient Approach to Wireless Sensor Network Design,” Technical Report 474, Department of Statistics, The University of Michigan, under revision.

[5] Katenka, N., Levina, E., and Michailidis, G. (2008), “Fused Classification of Correlated Data,” in preparation.

Presentations

- **October 2008** – Graduate Program Presentation, representative of the Department of Statistics at The 11th Annual Michigan Undergraduate Math Conference, Dearborn, MI.
- **August 2008** – Paper Presentation, 2008 Joint Statistical Meetings, Denver, CO.
- **May 2008** – Invited Talk, INTERFACE 2008, “RISK : Reality”, Durham, NC .
- **January 2008** – Poster Presentation, Workshop on Environmental Sensor Networks at SAMSI , NC.
- **June 2007** – Paper Presentation, Rackham Interdisciplinary Workshop on Statistical Topics, University of Michigan, Ann Arbor, MI.
- **March 2007** – Poster Presentation. MSSISS (Michigan Student Symposium for Interdisciplinary Statistical Sciences), MI.
- **January 2007** – Graduate student participant at Mathematical Challenges and Opportunities in Sensor Networking Workshop, Institute of Pure and Applied Mathematics (IPAM), UCLA, CA.
- **June 2006** – Invited Talk, Joint Research Conference on Statistics in Quality (JRC), Industry and Technology, Knoxville, TN.
- **April 2004** – Presentation, International Conference on Modeling and Simulation, General applications and Systems/ Intelligent technologies, Faculty of Applied Mathematic and Computer Science , Belarusian State University, Minsk, Belarus.

Relevant Honors/Awards

- Rackham Travel Grants to present at the JRC(2006), INTERFACE(2008), and JSM (2008) .
- SAMSI(2008) Workshop Fellowship.
- IPAM(2006) Workshop Fellowship.
- JRC Paper Award and Conference Scholarship (2006).
- Department of Statistics, The University of Michigan Fellowship (2004).
- Belarusian State University Full Fellowship(1999-2004).
- Belarusian State University Diploma with Honors (2004).

Current Membership in Professional/Honorary Societies

- American Statistical Association (ASA)
- Institute of Electrical and Electronics Engineers (IEEE)

Research Experience

- **Summer 2005-present** [Department of Statistics, University of Michigan](#)
Research Assistant: investigated the problems of a single and multi-target detection, localization, and tracking in a wireless sensor network (WSN) with applications to ZebraNet data and Network Embedded Systems Technology (NEST) project data (main results summarized in [1],[2],[3]). Explored the problem of the wireless sensor network cost minimization subject to the area coverage and sensor connectivity (results are described in [4].). Studied approaches to adaptive sensor scheduling and target tracking in a wireless sensor network; learned basics of the functional data analysis, performed a sequence of simulations (MATLAB, R), developed graphical user interface (GUI) application (MATLAB). Also analyzed various statistical classification methods, developed new classification framework for fused data; performed a sequence of analytical and numerical calculations (MATLAB), explored different areas of application: demography, economics, and ecology. The results are in preparation([5]).
- **Fall 2002-Spring 2004** [National Academy of Science of Belarus, the Institute for Problems of Natural Resources Use and Ecology](#) (Minsk, Belarus)
Research Assistant: conducted research in the area of national ecological resources consumption by performing mathematical modeling via systems of partial differential equations(PDE). Main results served as the basis for Masters thesis in Applied Mathematics. Participated in a project for BelTransGaz (government gas supply company).

Teaching and Related Experience

- **Summer 2008** [Center for Research on Learning and Teaching, University of Michigan-Ann Arbor](#)
Graduate Student Instructor Consultant: provided mentoring and teaching consulting during three-week August course for new international graduate students (Summer 2008).
- **Fall 2007/ Winter 2007** [Department of Statistics, University of Michigan-Ann Arbor](#)
Graduate Student Instructor (GSI) for Stat 503 ([Applied Multivariate Analysis](#)): graded bi-weekly assignments, proctored midterms and final exams, held office hours, provided the code and help (R, SAS, Ggobi), formatted datasets (XML).

- **Summer 2007** [Inter-University Consortium for Political and Social Research \(ICPSR\) \(MI, USA\)](#)
Computing Consultant: provided user support for a variety statistical and related software packages (R,SAS,STATA,SPSS,Latex,etc.); assisted instructors with computer hardware and software in-classroom set-up, performed basic maintenance of the computing facilities.
- **Fall 2005, 2006/Winter 2006, 2007** [Department of Statistics, University of Michigan](#)
Graduate Student Instructor for Stat 350 (Introduction to Statistic and Data Analysis): taught weekly labs, where reviewed statistical and data analysis concepts, discussed problems and solutions, introduced the students to SPSS, planned and prepared handouts, quizzes, and homework solutions, incorporated new clicker Qwizdom technology. Additional responsibilities included: grading weekly assignments, proctoring and grading of the midterms and final exams, and holding office hours.
- **Winter 2005/ Fall 2004** [Department of Statistics, University of Michigan-Ann Arbor](#)
Graduate Student Instructor for Stat 412 (Introduction to Probability and Statistics): Responsibilities included: grading of the weekly assignments, proctoring and grading of the midterms and final exams, holding consultations and office hours.

Other Service and Activities

- Preferred Tutor and Consultant for EMBA 603 (“Decision Making Under Uncertainty”-Fall 2008).
- Tutor for undergraduate (Stats 100, 350, 412, 425, 426) and graduate (Stats 500, 503) classes (2005-2008).
- Graduate Student Peer Mentor: advised graduate students with advanced Statistics and Probability courses and qualifying exams (University of Michigan, since 2006).
- Undergraduate Student Mentor: provided mentoring and leadership for undergraduate students, helped undergraduates to learn first-hand about selecting future specialization, prepare for and apply to internships and graduate school (Belarusian State University, 2002-2004).
- Referee for IEEE Signal Processing Letters (3 papers).

Industry Experience

- **Summer 2005** Statistical Analysis and Reporting (StAR) Department, [PFIZER, Inc.](#) (MI, USA) Statistical Programmer/Analyst: developed a set of scripts (PERL) and a reference manual for a departmental Workload Assessment Process (WAP); created database (MS Access / VB) for Ann Arbor's Local Data Standard training organization; performed a Quality Check service, data mapping, statistical programming in clinical trials (SAS), and reporting. Attended Pfizer Research University (PRU) "From Molecule to Medicine" workshop.
- **Fall 2003-Summer 2004** Software Quality Assurance (SQA) Department, [BelHard Group](#). (Minsk, Belarus) Quality Assurance Engineer: took part in QA process for Commercial/Financial software ([Kyriba](#)) performed test automation process modeling, design, test implementation (Java, C++), data summary, results interpretation, and reporting; used Rational Unified Process (RUP) framework and Rational testing tools, as well as sampling techniques, and various statistical methods.
- **Summer 2003** Biostatistics Department, [i3STATPROBE, Inc.](#) (Columbus, OH, USA) Statistician: took part in statistical document preparation for clinical trials (phase II, phase III, both for safety (ISS) and efficacy (ISE)), performed modeling, sampling analysis, statistical programming (SAS, SPSS, etc.), table validation, data mapping, data summary, results interpretation, and reporting.

Computing Skills

- **Operating Systems:** Windows 95/98, Windows NT/2000/XP Professional, Unix, Linux, DOS.
- **Statistical/Mathematics Software and Applications:** SAS, R\S-Plus, SPSS, STATA, Matlab, Mathematica.
- **Programming Languages:** SQL, Java, Perl, C++, Pascal, HTML.
- **Other Applications:** Latex, Rational XDE Tester/Test Manager/Clear Case/Rose, Microsoft Office, Adobe Photoshop.