

Alexander Statnikov

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Education

Vanderbilt University, Nashville, Tennessee

Ph.D. Student (currently Ph.D. Candidate), Biomedical Informatics, GPA 3.9, January 2003-Present

Master of Science, Biomedical Informatics, GPA 3.9, August 2005

Case Western Reserve University, Cleveland, Ohio

Master of Science, Applied Mathematics, GPA 3.9, August 2002

Bachelor of Science, Mathematics, GPA 3.6, August 2001

Moscow State Institute of Electronics and Mathematics, Moscow, Russia

Applied Mathematics, GPA 3.9, September 1996-July 1999

Work Experience

Discovery Systems Laboratory, Department of Biomedical Informatics,

Vanderbilt University Medical Center, Nashville, Tennessee: May 2002-Present

Lead Scientific Programmer

- Programming complex machine learning and statistical algorithms and optimizing existing implementations;
- Conducting large-scale feature selection, causal discovery, and classification experiments;
- Participating in theoretical design of new algorithms;
- Writing research papers and technical reports;
- Developing software applications and libraries of algorithms for feature selection, causal discovery and classification in biomedical domains;
- Organizing and developing computational infrastructure of the laboratory.

Zyxbio, LLC, Cleveland, Ohio: February 2002-May 2002

Scientific Programmer

- Developed computer models for prediction of drug absorption using neural networks;
- Consulted major pharmaceutical firms on integration and software design issues of the company's products.

Department of Mathematics, Case Western Reserve University, Cleveland, Ohio: May 2000-May 2002

Scientific Programmer and Research Assistant

- Developed a software system for image reconstruction;
- Programmed numerical mathematics algorithms;
- Participated in NASA Glenn Research Center Wind Tunnel project;
- Created graphics user interface applications for X-Windows.

Mechanical Engineering Research Institute, Moscow, Russia: February 1997-August 1999

Programmer and Research Assistant

- Developed interface programs for multicriteria optimization;
- Co-authored a comprehensive software system MOVI (Multicriteria Optimization and Vector Identification) for multicriteria analysis.

NPO StroyService Ltd., Moscow, Russia: December 1998-August 1999

Programmer and System Administrator

- Developed accounting and inventory software system;
- Created and maintained the company's website;
- Participated in business negotiations in Taiwan (May 1999).

Consulting

Prediction Sciences, La Jolla, California: February 2004-March 2004

- Developed computational diagnostic models of cerebrovascular disorders based on molecular and clinical data.

Publications

Journal Papers:

- Aliferis CF, **Statnikov A**, Tsamardinos I, Schildcrout JS, Shepherd BE, Harrell FE. Gene Expression Microarrays Do Predict Clinical Outcomes. *Submitted*. 2007.
- Aliferis CF, **Statnikov A**, Tsamardinos I. Challenges in the Analysis of Mass-Throughput Data: A Technical Commentary from the Perspective of Statistical Machine Learning. *Cancer Informatics*. 2006; 2: 133-162.
- Aphinyanaphongs Y, **Statnikov A**, Aliferis CF. A Comparison of Citation Metrics to Machine Learning Filters for the Identification of High Quality MEDLINE Documents. *Journal of the American Medical Informatics Association*. 2006 Jul-Aug; 13: 446-455.
- Levy S, **Statnikov A**, Aliferis CF. Biomarker Selection from High-Dimensionality Data. *Pharmaceutical Discovery*. 2005 Microarray Supplement, September 2005: 37-44.
- **Statnikov A**, Tsamardinos I, Dosbayev Y, Aliferis CF. GEMS: A System for Automated Cancer Diagnosis and Biomarker Discovery from Microarray Gene Expression Data. *International Journal of Medical Informatics*. 2005 Aug; 74(7-8): 493-501.
- **Statnikov A**, Aliferis CF, Tsamardinos I, Hardin D, Levy S. A Comprehensive Evaluation of Multicategory Classification Methods for Microarray Gene Expression Cancer Diagnosis. *Bioinformatics*. 2005 Mar; 21(5): 631-43.
- Aphinyanaphongs Y, Tsamardinos I, **Statnikov A**, Hardin D, Aliferis CF. Text Categorization Models for High-Quality Article Retrieval in Internal Medicine. *Journal of the American Medical Informatics Association*. 2005 Mar-Apr; 12(2): 207-16.

Papers in Conference Proceedings:

- **Statnikov A**, Hardin D, Aliferis CF. Using SVM Weight-Based Methods to Identify Causally Relevant and Non-Causally Relevant Variables. *Neural Information Processing Systems (NIPS) 2006 Workshop on Causality and Feature Selection*, 2006.
- Tsamardinos I, **Statnikov A**, Brown LE, Aliferis CF. Generating Realistic Large Bayesian Networks by Tiling. *19th International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, 2006.

- Duda S, Aliferis CF, Miller R, **Statnikov A**, Johnson K. Extracting Drug-Drug Interaction Articles from MEDLINE to Improve the Content of Drug Databases. *AMIA Annual Symposium*, 2005.
- **Statnikov A**, Aliferis CF, Tsamardinos I. Methods for Multi-Category Cancer Diagnosis from Gene Expression Data: A Comprehensive Evaluation to Inform Decision Support System Development. *Medinfo*, 2004.
- Aliferis CF, Tsamardinos I, **Statnikov A**. HITON: A Novel Markov Blanket Algorithm for Optimal Variable Selection. *AMIA Annual Symposium*, 2003.
- Tsamardinos I, Aliferis CF, **Statnikov A**. Time and Sample Efficient Discovery of Markov Blankets and Direct Causal Relations. *9th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, 2003.
- Aliferis CF, Tsamardinos I, Massion P, **Statnikov A**, Fananapazir N, Hardin D. Machine Learning Models for Classification of Lung Cancer and Selection of Genomic Markers Using Array Gene Expression Data. *16th International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, 2003.
- Tsamardinos I, Aliferis CF, **Statnikov A**. Algorithms for Large Scale Markov Blanket Discovery. *16th International Florida Artificial Intelligence Research Society (FLAIRS) Conference*, 2003.
- Frey L, Fisher D, Tsamardinos I, Aliferis CF, **Statnikov A**. Identifying Markov Blankets with Decision Tree Induction. *Third IEEE International Conference on Data Mining (ICDM)*, 2003.
- Aliferis CF, Tsamardinos I, **Statnikov A.**, Brown LE. Causal Explorer: A Probabilistic Network Learning Toolkit for Biomedical Discovery. *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS)*, 2003.
- Aliferis CF, Tsamardinos I, Massion P, **Statnikov A**, Hardin D. Why Classification Models Using Array Gene Expression Data Perform So Well: A Preliminary Investigation of Explanatory Factors. *International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS)*, 2003.

Posters and Abstracts in Conference Proceedings:

- Aliferis CF, **Statnikov A**, Tsamardinos I, Kokkotou E, Massion PP. Application and Comparative Evaluation of Causal and Non-Causal Feature Selection Algorithms for Biomarker Discovery in High-Throughput Biomedical Datasets. *Neural Information Processing Systems (NIPS) 2006 Workshop on Causality and Feature Selection*, 2006.
- Aliferis CF, **Statnikov A**, Massion PP. Pathway Induction and High-Fidelity Simulation for Molecular Signature and Biomarker Discovery in Lung Cancer Using Microarray Gene Expression Data. *APS Conference: Physiological Genomics and Proteomics of Lung Disease*, 2006.
- **Statnikov A**, Tsamardinos I, Aliferis CF. Using GEMS for Cancer Diagnosis and Biomarker Discovery from Microarray Gene Expression Data. *13th Annual International Conference on Intelligent Systems for Molecular Biology (ISMB)*, 2005.

Software Demonstrations in Conference Proceedings:

- **Statnikov A**, Tsamardinos I, Aliferis CF. Using the GEMS System for Supervised Analysis of Cancer Microarray Gene Expression Data. *AMIA Annual Symposium*, 2005.
- **Statnikov A**, Tsamardinos I, Aliferis CF. Using the GEMS System for Cancer Diagnosis and Biomarker Discovery from Microarray Gene Expression Data. *12th National Conference on Artificial Intelligence (AAAI)*, 2005.
- **Statnikov A**, Tsamardinos I, Aliferis CF. Using GEMS for Cancer Diagnosis and Biomarker Discovery from Microarray Gene Expression Data. *13th Annual International Conference on Intelligent Systems for Molecular Biology (ISMB)*, 2005.

Technical Reports:

- **Statnikov A**, Aliferis CF. Local Structure Discovery in the Presence of Deterministic Relations. Technical Report DSL TR-06-03, *Department of Biomedical Informatics, Vanderbilt University*, 2006.
- **Statnikov A**, Kasparova E, Aliferis CF. Applying Decision Support Models in the Presence of Incomplete Evidence. Technical Report DSL TR-06-02, *Department of Biomedical Informatics, Vanderbilt University*, 2006.
- **Statnikov A**, Tsamardinos I, Aliferis CF. New Efficient and Correct Algorithms for Identification of Direct Causal Relationships and Markov Blankets from Data. Technical Report DSL TR-06-01, *Department of Biomedical Informatics, Vanderbilt University*, 2006.
- Tsamardinos I, Aliferis CF, **Statnikov A**, Brown LE. Scaling-Up Bayesian Network Learning to Thousands of Variables Using Local Learning Technique. Technical Report DSL TR-03-02, *Department of Biomedical Informatics, Vanderbilt University*, 2003.
- **Statnikov A**, Tsamardinos I, Aliferis CF. An Algorithm for Generation of Large Bayesian Networks. Technical Report DSL TR-03-01, *Department of Biomedical Informatics, Vanderbilt University*, 2003.
- Aliferis CF, Tsamardinos I, **Statnikov A**. Large-Scale Feature Selection Using Markov Blanket Induction for the Prediction of Protein-Drug Binding. Technical Report DSL TR-02-06, *Department of Biomedical Informatics, Vanderbilt University*, 2002.

Theses:

- **Statnikov A**. Automatic Cancer Diagnostic Decision Support System for Gene Expression Domain. Master's Thesis. *Department of Biomedical Informatics, Vanderbilt University*, Advisors: Dr. Constantin F. Aliferis and Dr. Ioannis Tsamardinos, August 2005.
- **Statnikov A**. Numerical Methods for Image Reconstruction for the Calibration of the NASA-Glenn Icing Research Wind Tunnel: A Computer-Based Approach. Master's Thesis. *Department of Mathematics, Case Western Reserve University*, Advisor: Dr. Steven H. Izen, August 2002.

(The list of publications in Multicriteria Analysis is available upon request)

Honors and Awards

- ISMB 2005 Best Poster Award (June 2005)
- Medinfo 2004 Student Paper Competition, Gold Medal (September 2004)

- Vanderbilt University Medical School Dean's Scholarship (September 2004-Present)
- Nominated for Vanderbilt Informatics Center People's Choice Award (May 2003, June 2005)
- American Mathematical Society Waldemar J. Trjitzinsky National Award (May 2000)
- Case Western Reserve University Dean's Honors List (2000)

Professional and Scientific Societies

- AMIA (American Medical Informatics Association): 2003-Present
- ISCB (International Society for Computational Biology): 2004-Present
- AAAI (American Association for Artificial Intelligence): 2005-Present
- AMS (American Mathematical Society): 2001-Present

Scientific Reviewer Activities

Journals:

- Bioinformatics
- BMC Bioinformatics
- Journal of Biomedical Informatics
- Nucleic Acids Research
- PLoS Genetics
- FEBS Letters
- Computational Statistics and Data Analysis
- Journal of Clinical and Laboratory Medicine

Conferences:

- AMIA (American Medical Informatics Association) 2006 Symposium
- The 10th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2006), Workshop on Data Mining for Biomedical Applications (BioDM 2006)
- The 11th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2005)

Books:

- "Computational Intelligence in Bioinformatics" (Editor in Chief: Arpad Kelemen)

Leadership

- AMIA (American Medical Informatics Association) Genomics Workgroup Student Representative: April 2005-Present.

Teaching Experience

- *Instructor of Undergraduate Mathematics Courses*, Department of Mathematics, Case Western Reserve University, Cleveland, Ohio: August 2001-May 2002.

- *Teaching Assistant*, Department of Mathematics, Case Western Reserve University, Cleveland, Ohio: January 2000-May 2001.

Other Experience

- *Webmaster*, Department of Mathematics, Case Western Reserve University, Cleveland, Ohio: January 2000-May 2002.
- *Webmaster*, Department of Mechanical Engineering, Cleveland State University, Cleveland, Ohio: December 2000-May 2001.

Personal

- Born in Moscow, Russia, 1979
- United States citizen
- Fluent in English and Russian