

Andrei V. Anghelescu

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Summary

Highly motivated trading desk strategist with two years of experience in the MBS and ABS areas. Experienced with development of models of financial products, as well as coordination of design and implementation in conjunction with the trading desk. Computer Science Ph.D. level analytical background with expertise in Machine Learning, Discrete Optimisation, Information Retrieval, Structural Data Analysis and Visualisation, and their applications in text categorization, bioinformatics and time series analysis.

Skills

- Expertise in a variety of machine learning, statistical analysis, optimisation techniques and numerical methods.
- Business knowledge of diverse securitized products (ABS, MBS, CMO), rate and loss models (HPA, prepay, default). Ability to quickly learn new products and domains.
- Expert in C++, Python, Perl, various UNIX shells and Java. Long-standing experience with various libraries: STL (Standard Template Library), Boost, Common C++, Lemur (text retrieval), ACE (Adaptive Communication Environment), Matlab and Zope.
- Focus on design ergonomony and minimalism; able to represent tasks in flexible abstract concepts.
- Strong written and interpersonal skills, with several years of experience teaching and presenting. Comfortable and effective speaker in all situations.
- Fast integration into a team; efficient when working individually.
- Fluent in English, French and Romanian; proficient in German. International experience obtained from working in three different countries.
- Permanent resident of the USA (green card holder); EU citizen.

Professional Experience

DESK STRATEGIST
2006-PRESENT

MORGAN STANLEY
NEW YORK, NY

Responsible for modelling and risk management development for the primary market trading desk, and for the new products originated in the retail banking group (MS Bank). Developed, selected and affirmed the models used by the desk as a first step in the model certification process. Experience working on residential mortgage trading desks (primary, secondary) on the development of a variety of models and tools. Designed the infrastructure for the client mortgage rate model. Long term collaboration with the asset backed securities desk towards the development of custom models required by the traders. Developed a prototype of a blotter for the RPX trading desk. Consistently interacted with the traders regarding strategy design and development, rapidly adjusting focus and direction as prompted.

Project highlights:

- contributed to the development of an analytics library that modelled the various structured products traded by the aforementioned desks. This included mortgage pool optimisation, pricing of mortgage securities, servicing rights and custom loans, and mortgage pipeline management models.
- developed analytical tools for risk valuation and reporting for various custom products originating in the retail banking division.

- designed the infrastructure for the deployment of residential mortgage rates to clients, then supervised its development.
- contributed to the design and development of an application that integrated all securities of various desks and databases. Interfaced with analytics libraries to allow seamless computation of metrics and risk management. Working prototype of data caching to allow live update of metrics where computationally feasible.
- in collaboration with the modelling team developed an application for computing mortgage servicing rights - initially with myself as sole contributor, later as a supervisor of the implementation of this model as a distributed application that enabled heavy computations.
- developed a simple default model for HELOCs and calibrated it to recent market prices - the current market developments were both the chief reason and the main challenge.
- developed a variety of frequently used applications to streamline the daily tasks of the desk (pricing, marking, risk management). Many of these applications were later included as components of core tools.

GRADUATE INTERN
2004-2005

PHARMACOPEIA, DRUG DISCOVERY INC.
NEW JERSEY, USA

Created a patented technology for estimating molecular 3D structures using multiple alignments of 1D representations of molecules. Developed a scalable clustering procedure for molecular fingerprint data. The scalability was a key factor, as the size of a molecular library is much larger than what can be handled by state-of-the-art hardware. The software was written in C++ as a library with a small text-based interface, and it added 15,000 lines of code to the existing software, on which it relied.

Patent Application Nr. 11/283650

GRADUATE ASSISTANT
1999-2006

RUTGERS UNIVERSITY
NEW JERSEY, USA

Research and teaching assistantships in DIMACS (Center for Discrete Mathematics and Theoretical Computer Science) and the Department of Computer Science:

- Research assistant in the Knowledge Discovery and Data Mining (KDD) sponsored “Monitoring Message Streams” project at DIMACS. Wrote (in C++) an object-oriented library of classification and feature selection algorithms, data representation, wrappers to SVM learning software (i.e. SVM^{Light}) and other machine learning related algorithms. Published under the GNU Public Licence v2.0. The implementation focuses equally on speed of execution, small memory footprint and convenience of use for the programmer. Currently at 22,000 lines of code, available at <http://www.cs.rutgers.edu/~angheles>.
- Research assistant in the Computer Science department at Rutgers University. Development of novel clustering methods exemplified by applications in text analysis, bio-informatics and financial time-series data.
- collaboration with the Linguistics department at Rutgers, in the development of a study of anaphora in African languages.
- Teaching assistant in the Computer Science Department, Rutgers University. Courses taught include: Numerical Analysis, Internet Technology, Data Structures, Computer Graphics.

SOFTWARE ENGINEER
1998-1999

BOUYGUES TELECOM
PARIS, FRANCE

Various projects in the Network and IT department.

- Developed automatic cell frequency allocation software, using Monte Carlo methods (Simulated Annealing and Genetic Algorithms). Integrated with PlaNET[®] and CellOpt[®].
- Supervised and contributed to the development of a hardware inventory distributed database, with Oracle[®] back-end and Delphi-based front-end.

SYSTEMS ADMINISTRATOR
1997

UNIVERSITY OF BUCHAREST
BUCHAREST, ROMANIA

Maintained Windows NT network. Updated institutional database. Assisted in the roll out of various software programs.

PROGRAMMER
1996-1998

SUMUS S.R.L
BUCHAREST, ROMANIA

Developed and maintained various programs with applications in civil engineering.

Education

- 2009 Ph.D., Department of Computer Science, Rutgers University (expected 2009)
1998 B.S., Department of Mathematics, University of Bucharest

Selected Publications

- [1] Andrei V. Angheliescu, Robert K. DeLisle, Jeffrey F. Lowrie, Anthony Klön, David J. Diller. Technique for Generating Three-Dimensional Alignments of Multiple Ligands from One-Dimensional Alignments. In *Journal of Chemical Information and Modeling*, vol. 48-5, 2008.
- [2] Ken Safir, Andrei V. Angheliescu, Sarah E. Murray, Jessica Rett. The African Anaphora Project. In *Proceedings of the Language Resource and Evaluation LREC Conference*, 2006.
- [3] Andrei V. Angheliescu, Aynur Dayanik, Dmitriy Fradkin, Alex Genkin, Paul Kantor, David Lewis, David Madigan, Ilya Muchnik, Fred Roberts. Simulated Entity Resolution by Diverse Means. In *Proceedings of the KDD Challenge Cup*, 2005.
- [4] Andrei V. Angheliescu and Ilya B. Muchnik. Optimisation of SVM in the space of two parameters: weak margin and intercept. Applications to text classification. *JICRD*, 2004.
- [5] Andrei V. Angheliescu and Ilya B. Muchnik. Combinatorial PCA and SVM methods for feature selection in learning classification (applications to text categorisation). In *Proceedings of the IEEE International Conference on Integration of Knowledge Intensive Multi-Agent Systems (KIMAS '03)*, pages 491–496, 2003.
- [6] Andrei V. Angheliescu, Endre Boros, Dmitriy Fradkin, David D. Lewis, Vladimir Menkov, David J. Neu, Kwong Bor Ng, and Paul B. Kantor. Prospective data fusion for batch filtering. *JICRD*, 2003.
- [7] Andrei V. Angheliescu, Endre Boros, David D. Lewis, Vladimir Menkov, David J. Neu, and Paul Kantor. Rutgers filtering work at TREC 2002: Adaptive and batch. In *Proceedings of the 11th Text Retrieval Conference (TREC 2002)*, 2002.
- [8] Andrei V. Angheliescu, Ilya B. Muchnik, and Casimir A. Kulikowski. Categorization of scientific papers by consensus clustering from pre-defined lists of keywords: Application to medical informatics. In *Proceedings of the Medical Informatics Symposium in Taiwan*, 2002.
- [9] Casimir A. Kulikowski, Ilya B. Muchnik, Akshay Vashist, Andrei V. Angheliescu, Hwaseob J. Yun, Eric Linton, and Joachim Messing. Multi-alignment of paralogs for functional annotation: Application to the rice genome. In *Proceedings of the 5th Annual Conf. on Computational Genomics, Baltimore, 18*, 2001.