Andreas Leonidas Prodromidis, Ph.D.

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RESEARCH INTERESTS

Knowledge Discovery and Data Mining, E-Commerce, Payment Systems, Distributed Systems, Machine Learning, Information Retrieval, Agent Technologies.

PROFESSIONAL EXPERIENCE

Director, Research and Development, iPrivacy LLC May 1999-present

First employee of the company and one of the initial designers of the iPrivacy system, a comprehensive system for anonymizing and securing E-Commerce (private surfing, private shopping, private shipping).

Worked closely with the iPrivacy business team and managed the iPrivacy technical team, a group of Visual C++ programmers, Linux and Apache web server developers and web-based email engineers. The iPrivacy system was delivered on time and is fully operational at the company's co-location facility.

Demonstrated and described iPrivacy software to top banking executives and at conferences and exhibitions.

Developed a Java-based proxy web server.

Database architect, programmer and DBA.

Graduate Research Assistant, Columbia University 1995-1999
Parallel and Distributed Intelligent Systems Laboratory

Designed, developed and evaluated JAM, a distributed data mining system for managing intelligent learning agents across multiple database sites to gain and combine new knowledge. JAM was used in credit card fraud detection with impressive results. It analyzed real credit card transactions provided by two banks, members of the FSTC, and computed models that explain anomalous or errant behavior. When JAM used these models as fraud predictors on new transactions, it outperformed the standard COTS (Commercial Off The Shelf) detectors employed by the industry. The results were presented in many computer science conferences.

IBM Co-op Student, IBM T.J. Watson Research Center 1996-1997
Network Servers department
(Full time in summer, part time during the academic year)

Participated in the design and implementation of a prototype system for combining data analysis algorithms with databases on the Internet.

Participated in the Lava Project, replacing JavaOS's core kernel with a new microkernel developed at IBM

IBM Co-op Student, IBM T.J. Watson Research Center 1995-1996
Cluster and Distributed Systems department
(Full time in summer, part time during the academic year)

Developed and evaluated OCTOPUS on a multi-node IBM SP2 machine running AIX 4.1. OCTOPUS is an extensible, hierarchical, reconfigurable and fault tolerant job scheduling system for cluster computing environments.

Graduate Research Assistant, Columbia University 1993-1995
Mobile Computing Laboratory

Extended an MPEG video player to operate across mobile links and adapt to changing network conditions. Introduced a proxy host, capable of filtering incoming MPEG streams (destined to the mobile hosts) to accommodate bandwidth changes.

Modified the SunOs kernel to optimize file and path name lookup, augmenting the VFS lookup algorithm and the NFS protocol. Conducted performance tests.

Software Engineer, Intrasoft Corp. 1992-1993
Developed a CASE tool to support the architecture design of real time systems.

EDUCATION

Ph.D. Computer Science, Columbia University September 1999
Advisor: Professor Salvatore J. Stolfo
Thesis: Management of Intelligent Learning Agents in Distributed Data Mining Systems

Data mining systems aim to discover patterns and extract useful information from facts recorded in databases. In this dissertation, we concentrated on the problem of managing a distributed collection of intelligent learning agents that compute and combine descriptive models over large and distributed databases. I designed and implemented JAM (Java agents for Meta-learning), an extensible agent-based distributed data mining system that supports the remote dispatch and exchange of agents among participating data sites and employs meta-learning techniques to combine the multiple models that are learned. JAM is a scalable system, designed to make effective use of the available system resources and implemented to operate across heterogeneous platforms. Furthermore, it is adaptive to changes in its computational environment and is flexible to accommodate databases with differences in their schema definitions. An empirical analysis of JAM on the real-world data mining task of fraud detection in financial information systems, evaluated the effectiveness and performance of our approaches and demonstrated their potential utility.

M.Phil. Computer Science, Columbia University October 1996
Advisor: Professor Salvatore J. Stolfo GPA: 4.0

M.S. Computer Science, Columbia University October 1994
Advisor: Professor Daniel J. Duchamp GPA:4.0

Diploma Electrical & Computer Engineering, National Technical Univ. of Athens July 1993
Advisor: Professor Emmanuel Protonotarios GPA: 9.34/10.0
Thesis: Methodology and Tools for the Automated Description of Telecommunication Systems.

HONORS AND AWARDS

IBM Fellowship 1996-1998
Honorable mention, runner-up for Best Paper Award, KDD'97 1997
I. Kollias Award and Fellowship 1992

Merit Scholarships by Greek National Scholarship Foundation (5 times) 1989-1993
Distinction in the Greek Mathematics Olympics 1987

TEACHING EXPERIENCE

Project Student Supervisor, Columbia University Spring 1996 - Fall 1999
Supervised a group of graduate and undergraduate students to enhance and extend JAM.

Instructor, Columbia University Fall 1996
Introduction to the C Programming Language (W3101)

Teaching Assistant, Columbia University Spring 1994 - Spring 1996
Computability and models of Computation (W3261), Computer Organization (W3824), Programming Languages and Translators (W4115), Artificial Intelligence (W4701)

Teaching Assistant, National Technical University of Athens Spring 1993
Introduction to Databases

PUBLICATIONS

(http://www.cs.columbia.edu/~andreas/publications/publications.html)

Refereed Journal Publications

1. Andreas L. Prodromidis and Salvatore J. Stolfo, “Cost Complexity-based Pruning of Ensemble Classifiers”, Knowledge and Information Systems (KAIS 2001) (Accepted, In press)

2. Philip K. Chan, Wei Fan, Andreas L. Prodromidis and Salvatore J. Stolfo, "Distributed Data Mining in Credit Card Fraud Detection", IEEE Intelligent Systems on Data Mining, December 1999.

Refereed Book Chapters

3. Andreas L. Prodromidis, Salvatore J. Stolfo and Philip Chan, "Meta-Learning in Distributed Data Mining Systems: Issues and Approaches", Book on "Advances of Distributed Data Mining", editors Hillol Kargupta and Philip Chan, AAAI press, August 2000.

4. Nayeem Islam, Andreas L. Prodromidis and Mark Squillante. "Dynamic Partitioning in Different Distributed Memory Environments", (Long Version) In Job Scheduling Strategies for Parallel Processing, pages 244-270, Lecture Notes in Computer Science Vol. 1162 (Springer-Verlag 1996)

Refereed Conference Publications

5. Salvatore J. Stolfo, W. Fan, Wenke Lee, Andreas L. Prodromidis and Philip Chan, “Cost-based Modeling for Fraud and Intrusion Detection: Results from the JAM project”, Proceedings of DARPA Information Survivability Conference and Exposition, IEEE Computer Press, 2000

6. Andreas L. Prodromidis and Salvatore J. Stolfo, "Minimal Cost Complexity Pruning of Meta-Classifiers”, Extended Abstract, Sixteenth National Conference on Artificial Intelligence (AAAI-99), page 979, Orlando Florida, July 1999

7. Andreas L. Prodromidis and Salvatore J. Stolfo. "Pruning Meta-Classifiers in a Distributed Data Mining System", In Proc. of the First National Conference on New Information Technologies (NIT’98), pages 151-160. Athens, Greece, October 1998.

8. Andreas L. Prodromidis and Salvatore J. Stolfo. "Mining databases with different schemas: Integrating incompatible classifiers", In Proc of the Fourth AAAI International

Conference on Knowledge Discovery and Data Mining (KDD'98), pages 314-318, New York, August 1998.

9. Salvatore Stolfo, Andreas L. Prodromidis, Shelley Tselepis, Wenke Lee, Wei Fan and Philip Chan. "JAM: Java Agent for Meta Learning Over Distributed Databases", In Proc. of the Third AAAI International Conference on Knowledge Discovery and Data Mining (KDD'97), pages 74-81. Newport Beach, California, August 1997 (Runner-up best applications paper).

10. Nayeem Islam, Andreas L. Prodromidis, Mark Squillante, Liana Fong and Ajei Gopal. "Extensible Resource Management for Cluster Computing", In Proc. of the Seventeenth IEEE International Conference on Distributing Computing Systems (ICDCS'97), pages 561-568, Baltimore, Maryland, May 1997.

11. Nayeem Islam, Andreas L. Prodromidis, Mark Squillante, Ajei Gopal and Liana Fong. "Extensible Resource Scheduling for Parallel Scientific Applications", In Proc. of the Eighth SIAM Conference on Parallel Processing for Scientific Computing (PP'97), CR-ROM edition, Minneapolis, Minnesota, March 1997.

Refereed Workshop Publications

12. Andreas L. Prodromidis and Salvatore J. Stolfo. "Cost Complexity Pruning of Ensemble Classifiers, KDD 2000 Workshop on Distributed and Parallel Knowledge Discovery, Boston MA, August 2000

13. Andreas L. Prodromidis and Salvatore J. Stolfo. "A comparative evaluation of Meta-Learning Strategies over Large and Distributed Data Sets, Sixteenth International Conference on Machine Learnning (ICML'99), Workshop on Meta-Learning, pages 18-27, Bled Slovenia, June 1999

14. Andreas L. Prodromidis and Salvatore J. Stolfo. "Pruning Meta-Classifiers in a Distributed Data Mining System", KDD'98 Workshop on Distributed Data Mining, pages 20-28, New York, New York, August 1998 (preliminary version of the NIT'98 paper).

15. Salvatore Stolfo, Andreas L. Prodromidis, Shelley Tselepis, Wenke Lee, Wei Fan and Philip Chan. "JAM: Java Agent for Meta Learning Over Distributed Databases", AAAI'97 Workshop on AI Approaches to Fraud Detection and Risk Management, pages 91-98, Providence, Rhode Island, July 1997 (preliminary version of the KDD'97 paper).

16. Salvatore J. Stolfo, Wei D. Fan, Wenke Lee, Andreas L. Prodromidis and Philip K. Chan. "Credit Card Fraud Detection Using Meta-Learning: Issues and Initial Results", AAAI'97 Workshop on AI Approaches to Fraud Detection and Risk Management, pages 83-90, Providence, Phode Island, July 1997

17. Nayeem Islam, Andreas L. Prodromidis and Mark S. Squillante, "Dynamic Partitioning in Different Distributed Memory Environments", In Proc. of the IEEE IPPS/SPDP'96 Second Workshop on Job Scheduling Strategies for Parallel Processing, pages 155-170, Hawaii, April 1996.

Other Publications

18. Andreas L. Prodromidis, Salvatore J. Stolfo, Shelley Tselepis, Terrance Truta, Jeffrey Sherwin and David Kalina, "Distributed Data Mining: The JAM system architecture", Technical Report, CUCS-014-01, Columbia University, 2001

19. Andreas L. Prodromidis and Salvatore J. Stolfo, "Agent-Based Distributed Learning in Fraud Detection", Technical Report, CUCS-014-99, Columbia University, 1999.

20. Andreas L. Prodromidis, "On The Management of Distributed Learning Agents", Technical Report, Columbia University, Computer Science Department, CUCS-032-97, 1997

21. Sheikh Hidayatullah, Nayeem Islam, Andreas L. Prodromidis, Vineet Singh, "A Mechanism for Combining Data Analysis Algorithms with Databases on the Internet", Technical Report, IBM, RC 20713 (1996)

22. Nayeem Islam, Andreas L. Prodromidis, Mark S. Squillante, Liana Fong and Ajei Gopal, "Octopus: Extensible Resource Management for Cluster Computing", Technical report IBM, RC 20526, 1996

23. Nayeem Islam and Andreas Prodromidis, "A design pattern for adaptive systems", Technical Report, Columbia University, Computer Science Department, CUCS-039-95, 1995.

24. Andreas L. Prodromidis, Panagiotis Heliotis and Sofia Kontaxaki, "SHAPE: The Complete Reference", Technical Report, Intrasoft Corp, Athens, 1993

INVITED PANELS, PRESENTATIONS AND POSTERS

Invited Speaker, "JAM: Java Agents for Meta-Learning for Fraud Detection", CASCON'97 conference, Toronto, Canada, November 1997

Invited Panelist, Secure E-Payments Workshop, CASCON'97 conference. Toronto, Canada, November 1997

Demonstration of the JAM system, CASCON'97 conference, Toronto, Canada, November 1997

Invited Poster, "The JAM project", CASCON'96 conference, Toronto, Canada, November 1996

SOFTWARE RELEASES

JAM version 2.11 Columbia University, June 1998

Latest release to DARPA and the Public Domain.
Earlier releases, include versions JAM-1.0, JAM-1.1, JAM-2.0 and JAM-2.1

PATENTS

"Method for obscuring access patterns using a buffer memory", J. Smith, J. Chung, A. Prodromidis, J. Sherwin, S. Stolfo, iPrivacy invention disclosure, July 2000

"Flexible Dynamic Partitioning of resources in a cluster Computing Environment", L. Fong, N. Islam, A. Gopal, A. Prodromidis, M. Squillante, IBM invention disclosure, May 1997

"Gang Scheduling for Resource Allocation in a Cluster Computing Environment", L. Fong, N. Islam, A. Gopal, A. Prodromidis, M. Squillante, IBM invention disclosure, November 1997

COMPUTER SKILLS

Programming Languages

C, C++, Java, Perl, Basic, Pascal, Prolog, Lisp, Fortran. Visual C/C++ conversant.

Operating Systems

UNIX (Solaris, AIX, BSD), Linux, Windows 2000/NT/98/95, DOS.

Other Technical Skills

SQL, Stored Procedures, Oracle8i, MySQL.
Apache Servers, Apache Modules, CGI, XML, HTML, Perl DBI, CORBA.
Java RMI, Multi-thread programming, JDBC, Java Applets, AWT, WBI.

System Administration, qmail, sqwebmail, Firewall Administration.
Unix shell scripting, awk, InstallShield.

PROFESSIONAL SOCIETIES

AAAI, IEEE Computer Society, ACM

ACTIVITIES AND SERVICES

Program Committee Member, PKDD'01 Workshop on Mobile and Distributed Data Mining
Program Committee Member, ECML'00 Workshop on Meta-Learning
Program Committee Member, ICML'99 Workshop on Meta-Learning

Reviewer for journals, books, conferences, workshops
Journal on Distributed and Parallel Databases
Journal on Knowledge Discovery and Data Mining
ML Journal special issue on Integrating Multiple Learned Models
KDD'98, ICML'98
Object Orienter Application Frameworks book by Wiley, 1998
IEEE Computer Theme Issue on Recent Developments on Operating Systems
CACM Theme Issue on Managing Object-Oriented Software Development Projects
CACM Theme Issue on Design Patterns
AAAI and KDD Workshops

Computer Science Department, Ph.D. committee member

REFERENCES

Available upon Request