PHILIP K. CHAN

Department of Computer Sciences
Florida Institute of Technology
Melbourne, FL 32901
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EDUCATION

Ph.D. in Computer Science, Columbia University, New York, New York (1996)
Thesis: *An extensible meta-learning approach for scalable and accurate inductive learning.*

M.S. in Computer Science, Vanderbilt University, Nashville, Tennessee (1988)
Master's paper: *A critical review of CN2: A polythetic classifier system.*

B.S. in Computer Science (*summa cum laude* and honors program), Southwest Texas State University, San Marcos, Texas (1986)
Honors thesis: *Development of Efficiency Decline Routine.*

RESEARCH AND WORK EXPERIENCE

Associate Professor, Dept. of Computer Sciences, Florida Institute of Technology (2002-present); **Assistant Professor** (1997-2002); **Visiting Assistant Professor** (1995-97).

Visiting Scientist, Laboratory of Computer Science, Massachusetts Institute of Technology (2002-3).

Research Assistant, Dept. of Computer Science, Columbia University (1988-95); Dept. of Computer Science, Vanderbilt University (1986-88).

Research Intern, Siemens Corporate Research (Summer, 1993); GTE Labs (Summer, 1992 & 1991); Citibank (Summer, 1990).

TEACHING EXPERIENCE

Associate Professor, Computer Science, Florida Institute of Technology: *Advances in the WWW*, *Artificial Intelligence*, *Data Structures and Algorithms*, *Database Systems*, *Distributed Computing*, *Fundamentals of Software Development 1*, *Intelligent Systems and the Internet*, *Machine Learning*, and *Scientific Writing.*

Tutorial Instructor, "Data Mining for Computer Security," C. Brodley & P. Chan, *ACM Intl Conf. on Knowledge Discovery and Data mining*, 2003; *SIAM Intl. Conf. on Data Mining*, 2004.

Instructor, Department of Computer Science, Columbia University: *Introduction to Computer Science.*

Teaching Assistant, Department of Computer Science, Columbia University: *Artificial Intelligence*, *Computer Networks*, and *Database Systems.*

Lab Instructor, Department of Computer Science, Vanderbilt University: *FORTRAN Programming.*

Volunteer Tutor, Big Brothers Big Sisters (2001–02, 2003–2009); AVID Program, Palm Bay High School (2003–04), Eau Galie High School (2001–02); Tutoring Plus, Cambridge, MA (2002–03); Barnard-Columbia Education Project, Columbia University (1988–1995).

PUBLICATIONS

H-Index

- 42 according to Google Scholar (as of 8/30/2018): `http://scholar.google.com/citations?user=R_q2Nh4AAAAJ`
- 20 according to Scopus (as of 8/30/2018): `http://www.scopus.com/authid/detail.uri?authorId=35239820000`

Book

1. *Advances in Distributed And Parallel Knowledge Discovery.* H. Kargupta and P. Chan (editors). AAAI/MIT Press, 2000.

Refereed Journals

1. X. Sun and P. Chan (2018). "Estimating Effectiveness of Twitter Messages with a Personalized Machine Learning Approach." *Knowledge and Information Systems*, 56(1):27-53. `https://doi.org/10.1007/s10115-017-1088-3`
2. N. Miller & P. Chan (2014). "Semantic Search Techniques for Learning Smaller Boolean Expression Trees in Genetic Programming" *Intl. J. Computational Intelligence and Applications*, 13(3).
3. G. Tandon & P. Chan. (2010). "Increasing coverage to improve detection of network and host anomalies." *Machine Learning*, 79(3):307-334.
4. H. Kim & P. Chan. (2008). "Learning Implicit User Interest Hierarchy for Context in Personalization." *Applied Intelligence*, 28(2):153-166.
5. S. Salvador & P. Chan (2007). "Toward accurate dynamic time wrapping in linear time and space." *Intelligent Data Analysis*, 11(5):561-580.
6. P. Chan & R. Lippmann (2006). "Machine Learning for Computer Security." *J. Machine Learning Research*, 7:2669-2672.
7. G. Tandon & P. Chan (2006). "On the Learning of System Call Attributes for Host-based Anomaly Detection." *International Journal on Artificial Intelligence Tools*, 15(6):875-892.
8. S. Salvador & P. Chan (2005). "Learning States and Rules for Detecting Anomalies in Time Series." *Applied Intelligence*, 23(3):241-255.
9. W. Fan, M. Miller, S. Stolfo, W. Lee & P. Chan (2004). "Using Artificial Anomalies to Detect Known and Unknown Network Intrusions." *Knowledge and Information Systems*, 6(5):507-527.
10. P. Chan, S. Stolfo & D. Wolpert (1999). "Integrating Multiple Learned Models for Improving and Scaling Machine Learning Algorithms." *Machine Learning*, 36(1&2):5-7.
11. P. Chan, W. Fan, A. Prodromidis & S. Stolfo (1999). "Distributed data mining in credit card fraud detection." *IEEE Intelligent Systems*, 14(6):67-74.
12. P. Chan & S. Stolfo (1997). "On the accuracy of meta-learning for scalable data mining." *J. Intelligent Information Systems*, 8(1):5-28.
13. C. Matheus, P. Chan & G. Piatetsky-Shapiro (1993). "Systems for knowledge discovery in databases." *IEEE Trans. on Knowledge and Data Engineering* (TKDE), 5:903-913.
14. S. Stolfo, O. Wolfson, P. Chan, H. Dewan, L. Woodbury, J. Glazier & D. Ohsie (1991). "PARULEL: Parallel rule processing by meta-redaction rules." *Journal of Parallel and Distributed Computing*, 13:366-382.
15. D. Fisher & P. Chan (1990). "Statistical guidance in concept learning." *Annals of Mathematics and Artificial Intelligence*, 2:135-147.

Refereed Book Chapters

1. H. Kim and P. Chan (2006). "Personalized Search Results with User Interest Hierarchies Learnt from Bookmarks." In *Advances in Web Mining and Web Usage Analysis* (LNCS 4198), O. Nasraoui, O. Zaine, M. Spiliopolou, B. Mobasher, B. Masand and P. Yu (editors), pp 158-176, Springer.

2. G. Tandon, P. Chan, and D. Mitra (2006). "Data cleaning and enriched representations for anomaly detection in system calls." In *Machine Learning and Data Mining for Computer Security: Methods and Applications*, M. Maloof (editor), Springer, pp. 137-156.

3. P. Chan, M. Mahoney & M. Arshad (2005). "Learning rules and clusters for anomaly detection in network traffic." In *Managing Cyber Threats: Issues, Approaches and Challenges*, V. Kumar, J. Srivastava, A. Lazarevic (editors), Springer, pp. 81-99.

4. P. Chan (2000). "Constructing web user profiles: A non-invasive learning approach." In *Web Usage Analysis and User Profiling*, M. Spiliopoulou and B. Masand (editors), Springer-Verlag, pp. 39-55.

5. A. Prodromidis, P. Chan, and S. Stolfo (2000). "Meta-learning in distributed data mining systems: Issues and approaches." In *Advances in Distributed And Parallel Knowledge Discovery*, AAAI/MIT Press, pp. 81-113.

6. H. Kargupta, C. Kamath, and P. Chan (2000). "Distributed and Parallel Data Mining: Emergence, Growth, and Future Directions." In *Advances in Distributed And Parallel Knowledge Discovery*, AAAI/MIT Press, pp. 409-417.

Refereed Conferences

1. M. Hassen and P. Chan (2018). "Learning to Identify Known and Unknown Classes: A Case Study in Open World Malware Classification." In *Proc. Intl. FLAIRS Conf.*, pp. 26-31. (Acceptance rate for full papers: 47%)

2. H. Hu and P. Chan (2018). "Using a Personalized Anomaly Detection Approach with Machine Learning to Detect Stolen Phones." In *Proc. Intl. FLAIRS Conf.*, pp. 323-328. (Acceptance rate for full papes: 47%)

3. L. Zhang and P. Chan (2018). "Detecting Harmful Hand Behaviors with Machine Learning from Wearable Motion Sensor Data." In *Proc. Intl. FLAIRS Conf.*, pp. 410-415. (Acceptance rate for full papers: 47%)

4. E. Ahmadzadeh and P. Chan (2017). "Mining Pros and Cons of Actions from Social Media for Decision Support" In *Proc. IEEE Intl. Conf. Big Data (BigData)*, pp. 877-882. (Acceptance Rate for regular/short papers: 38%)

5. M. Hassen, M. Carvalho and P. Chan (2017). "Malware Classification Using Static Analysis Based Features." *IEEE Symposium Series on Computational Intelligence*, pp. 734-740.

6. A. Kuroswiski and P. Chan (2017). "Using demographics to understand better the students' behavior, improving the performance prediction in online courses" *28th Brazilian Symposium on Informatics in Education (SBIE)*, Vol. 29, pp. 1577-1586.

7. M. Hassen and P. Chan (2017). "Scalable Function-Call Graph based Malware Classification." *ACM Conf. on Data and Applications Security and Privacy (CODASPY)*, pp. 239-248. (Acceptance rate for full papers: 16%)

8. P. Chan and E. Ahmadzadeh (2016). "Improving Efficiency of Maximizing Spread in the Flow Authority Model for Large Sparse Networks." In *Proc. IEEE Intl. Conf. Big Data (BigData)*, pp. 863-868. (Acceptance rate for regular/short papers: 38%)

9. M. Mori and P. Chan (2016). "Identifying Student Behaviors Early in the Term for Improving Online Course Performance." In *Proc. Intl. Conf. Educational Data Mining (EDM)*, pp. 611-612. (Acceptance rate for full/short/poster papers: 79%)

10. X. Sun and P. Chan (2014). "An Analysis of Instance Selection for Neural Networks to Improve Training Speed." In *Proc. Intl. Conf. Machine Learning and Applications (ICMLA)*, pp. 288-293. (Acceptance rate for regular papers: 35%)

11. K. Garcia & P. Chan (2012). "Estimating Hospital Admissions with a Randomized Regression Approach." In *Proc. Intl. Conf. Machine Learning and Applications (ICMLA)*, pp. 179-184. (Acceptance rate for regular papers: 37%)

12. D. Petrusenko & P. Chan (2010). "Incrementally Learning Rules for Anomaly Detection." In *Proc. Intl. FLAIRS Conf.*, pp. 434-439. (Acceptance rate for regular papers: 49%)

13. G. Tandon & P. Chan (2009). "Tracking user mobility to detect suspicious behavior." In *Proc. SIAM Intl. Conf. on Data Mining (SDM)*, pp. 871-882. (Acceptance rate for regular papers: 16%)

14. G. Tandon & P. Chan (2007). "Weighting versus Pruning in Rule Validation for Detecting Network and Host Anomalies." In *Proc. ACM Intl. Conf. on Knowledge Discovery and Data Mining (KDD)*, pp. 697-706. (Acceptance rate for full papers: 18%)

15. P. Chan & M. Mahoney (2005). "Modeling Multiple Time Series for Anomaly Detection." In *Proc. IEEE Intl. Conf. on Data Mining (ICDM)*, pp. 90-97. (Acceptance rate for regular papers: 11%)

16. H. Kim & P. Chan (2005). "Implicit Indicators for Interesting Web Pages." In *Proc. Intl. Conf. on Web Information Systems and Technologies (WEBIST)*, pp. 270-277. (Acceptance rate for regular papers: 49%)

17. G. Anagnostopoulos, M. Geogiopoulos, K. Ports, S. Richie, N. Cardinale, M. White, V. Kepuska, P. Chan, A. Wu & M. Kysilka (2005). "Project EMD-MLR: Educational Material Development and Research in Machine Learning for Undergraduate Students." In *Proc. 2005 ASEE Annual Conf. & Expo.*

18. G. Tandon & P. Chan (2005). "Learning Useful System Call Attributes for Anomaly Detection." In *Proc. 18th Intl. FLAIRS Conf.*, pp. 405-410. (Overall acceptance rate: 162/308=53%; one of 12 invited to submit to a special issue of *Intl. J. on AI Tools*: 12/308=4%)

19. H. Kim & P. Chan (2004). "Identifying Variable-Length Meaningful Phrases with Correlation Functions." In *Proc. 16th IEEE Intl. Conf. on Tools for AI (ICTAI)*, pp. 30-38. (Acceptance rate for regular papers: 49%)

20. S. Salvador & P. Chan (2004). "Determining the Number of Clusters/Segments in Hierarchical Clustering/Segmentation Algorithms." In *Proc. 16th IEEE Intl. Conf. on Tools for AI (ICTAI)*, pp. 576-584. (Acceptance rate for regular papers: 49%)

21. S. Salvador, P. Chan, and J. Brodie (2004). "Learning States and Rules for Time Series Anomaly Detection." In *Proc. 17th Intl. FLAIRS Conf.*, pp. 300-305. (Acceptance rate for the general conf: 49%)

22. G. Tandon, D. Mitra, and P. Chan (2004). "Motif-oriented Representation of Sequences for a Host-based Intrusion Detection System." In *Proc. 17th Intl. Conf. on Industrial & Engineering Applications of AI & Expert Systems (IEA/AIE)*, pp. 605-615. (Acceptance rate: 41%)

23. M. Mahoney and P. Chan (2003). "Learning Rules for Anomaly Detection of Hostile Network Traffic." In *Proc. Third IEEE Intl. Conf. Data Mining (ICDM)*, pp. 601-4. (Acceptance rate for regular/short papers: 26%)

24. M. Mahoney and P. Chan (2003). "An Analysis of the 1999 DARPA/Lincoln Laboratory Evaluation Data for Network Anomaly Detection." In *Proc. 6th Intl. Symp. Recent Advances on Intrusion Detection (RAID)*, ppp. 220-237. (Acceptance rate: 30%)

25. H. Kim and P. Chan (2003). "Learning Implicit User Interest Hierarchy for Context in Personalization." In *Proc. Intl. Conf. on Intelligent User Interfaces (IUI)*, pp. 101-108. (Acceptance rate for full papers: 21%)

26. M. Mahoney and P. Chan (2002). "Learning Nonstationary Models of Normal Network Traffic for Detecting Novel Attacks." In *Proc. Eighth Intl. Conf. on Knowledge Discovery and Data Mining (KDD)*, pp. 376-385. (Acceptance rate for full papers: 12%)

27. W. Fan, M. Miller, S. Stolfo, W. Lee, P. Chan (2001). "Using Artificial Anomalies to Detect Unknown and Known Network Intrusions." In *Proc. IEEE Intl. Conf. Data Mining (ICDM)*, pp. 123-130. (Acceptance rate for regular papers: 20%)

28. M. Douglas and P. Chan (2001). "A Protocol Language Approach to Generating Client-Server Software." In *Proc. Thirteenth Intl. Conf. Parallel and Distributed Computing and Systems*, pp. 649-654. (**nominated for best paper awards**).

29. Lee, Stolfo, Chan, Eskin, Fan, Miller, Hershkop, and Zhang (2001). "Real Time Data Mining-based Intrusion Detection." In *Proc. Second DARPA Information Survivability Conference and Exposition (DISCEX)*, pp. I89-100.

30. S. Stolfo, W. Fan, W. Lee, A. Prodromidis, & P. Chan (2000). "Cost-based Modeling for Fraud and Instrusion Detection: Results from the JAM Project." In *Proc. DARPA Information Survivability Conf. and Exposition (DISCEX)*, IEEE Computer Press, pp. II 130-144.

31. W. Fan, S. Stolfo, J. Zhang, and P. Chan (1999). "AdaCost: Misclassification Cost-sensitive Boosting." In *Proc. Sixteenth Intl. Conf. Machine Learning (ICML)*, pp. 99-105. (Acceptance rate: 36%)

32. P. Chan and S. Stolfo (1998). "Toward scalable learning with non-uniform class and cost distributions: A case study in credit card fraud detection." In *Proc. Fourth Intl. Conf. on Knowledge Discovery and Data Mining (KDD)*, pp. 164-168. (Acceptance rate for plenary/poster papers: 27%)

33. S. Stolfo, A. Prodromidis, S. Tselepis, W. Lee, W. Fan, and P. Chan (1997). "JAM: Java agents for meta-learning over distributed databases." In *Proc. Third Intl. Conf. on Knowledge Discovery and Data Mining (KDD)*, pp. 74-81 (**runner-up to Best Paper in Applied Research**). (Acceptance rate for plenary papers: 10%)

34. P. Chan and S. Stolfo (1996). "Sharing learned models among remote database partitions by local meta-learning." In *Proc. Second Intl. Conf. Knowledge Discovery and Data Mining (KDD)*, pp. 2-7. (Acceptance rate for regular papers: 20%)

35. P. Chan and S. Stolfo (1996). "Scaling learning by meta-learning over disjoint and partially replicated data." In *Proc. Ninth Florida AI Research Symposium (FLAIRS)*, pp. 151-155.

36. P. Chan and S. Stolfo (1995). "A comparative evaluation of voting and meta-learning on partitioned data." In *Proc. Twelfth Intl. Conf. on Machine Learning (ICML)*, pp. 90-98. (Acceptance rate: 32%)

37. P. Chan and S. Stolfo (1995). "Learning arbiter and combiner trees from partitioned data for scaling machine learning." In *Proc. Intl. Conf. on Knowledge Discovery and Data Mining (KDD)*, pp. 39-44.

38. P. Chan and S. Stolfo (1993). "Toward multistrategy parallel and distributed learning in sequence analysis." In *Proc. First Intl. Conf. on Intelligent Systems for Molecular Biology (ISMB)*, pp. 65-73.

39. P. Chan and S. Stolfo (1993). "Experiments on multistrategy learning by meta-learning." In *Proc. Second Intl. Conf. on Information and Knowledge Management (CIKM)*, pp. 314-323.

40. S. Stolfo, P. Chan, L. Woodbury, J. Glazier, and D. Ohsie (1991). "The ALEXSYS mortgage pool allocation system." In *Proc. First Intl. Conf. on AI Applications on Wall Street*, pp. 79-84.

Refereed Workshops

1. J. Hu and P. Chan (2008). "Personalized Web Search by Using Learned User Profiles in Re-ranking." In *Workshop on Web Mining and Web Usage Analysis (WEBKDD), SIGKDD Conf.*

2. M. Mahoney and P. Chan (2005). "Trajectory Boundary Modeling of Time Series for Anomaly Detection." In *Workshop on Data Mining Methods for Anomaly Detection, SIGKDD Conf.*

3. H. Kim and P. Chan (2005). "Personalized Ranking of Search Results with Learned User Interest Hierarchies from Bookmarks." In *Workshop on Web Mining and Web Usage Analysis (WEBKDD), SIGKDD Conf.*

4. G. Tandon, P. Chan, and D. Mitra (2004). "MORPHEUS: Motif Oriented Representations to Purge Hostile Events from Unlabeled Sequences." In *Workshop on Visualization and Data Mining for Computer Security (Viz/DMSEC), 11th ACM Conf. on Computer and Communications Security (CCS)*, pp. 16-25.

5. S. Salvador and P. Chan (2004). "FastDTW: Toward Accurate Dynamic Time Warping in Linear Time and Space." In *KDD Workshop on Mining Temporal and Sequential Data.*

6. G. Tandon and P. Chan (2003). "Learning Rules from System Call Arguments and Sequences for Anomaly Detection." In *ICDM Workshop on Data Mining for Computer Security*, pp. 20-29. (Acceptance rate: 47%)

7. R. Vargiya and P. Chan (2003). "Boundary Detection in Tokenizing Network Application Payload for Anomaly Detection." In *ICDM Workshop on Data Mining for Computer Security*, pp. 50-59. (Acceptance rate: 47%)

8. M. Samarah and P. Chan (2001). "Distributed Communication for Highly Mobile Agents." In *Fourth Pacific Rim Intl. Workshop on Multi-agents.*

9. P. Chan (1999). "A non-invasive learning approach to building web user profiles." In *Work. Notes KDD-99 Workshop on Web Usage Analysis and User Profiling*, pp. 7-12.

10. W. Fan, S. Stolfo, and P. Chan (1999). "Using conflicts among multiple base classifiers to measure the performance of stacking." In *Work. Notes ICML-99 Workshop on Recent Advances in Meta-Learning and Future Work*, pp. 10-17.

11. P. Chan and S. Stolfo (1998). "Learning with non-uniform class and cost distributions: Effects and a distributed multi-classifier approach." In *KDD-98 Workshop on Distributed Data Mining*, pp. 1-9.

12. S. Stolfo, W. Fan, W. Lee, A. Prodormidis, and P. Chan (1997). "Credit card fraud detection using meta-learning: Issues and initial results." In *AAAI-97 Workshop on AI Approaches to Fraud Detection and Risk Management*, pp. 83-90.

13. W. Lee, S. Stolfo, and P. Chan (1997). "Learning patterns from Unix process execution traces for intrusion detection." In *AAAI Workshop on AI Approaches to Fraud Detection and Risk Management*, pp. 91-98.

14. D. Fan, P. Chan, and S. Stolfo (1996). "A comparative evaluation of combiner and stacked generalization." In *Working Notes AAAI Work. on Integrating Multiple Learned Models*, pp. 40-46.

15. P. Chan and S. Stolfo (1994). "Toward scalable and parallel learning: A case study in splice junction prediction." In *ICML-94 Work. on Machine Learning and Molecular Biology.*

16. P. Chan and S. Stolfo (1993). "Toward parallel and distributed learning by meta-learning." In *Working Notes AAAI Work. on Knowledge Discovery in Databases*, pp. 227-240.

17. P. Chan and S. Stolfo (1993). "Meta-learning for multistrategy and parallel learning." In *Proc. Second Intl. Work. on Multistrategy Learning*, pp. 150-165.

18. S. Stolfo, L. Woodbury, J. Glazier, and P. Chan (1990). "The ALEXSYS mortgage pool allocation expert system." In *AAAI-90 Work. on AI and Business*.

19. P. Chan (1989). "Inductive learning with BCT." In *Proc. of the Sixth Intl. Work. on Machine Learning*, pp. 104-108.

20. D. Fisher and P. Chan (1989). "Statistical guidance in concept learning." In *Second Intl. Work. on AI and Statistics*, pp. 4:1-10.

Edited Collections

1. P. Chan and R. Lippmann (2006). *Machine Learning for Computer Security*. Special Topic in J. Machine Learning Research, 7:2669–2679.

2. S. Bay, P. Chan, T. Lane, and D. Margineantu (editors) (2005). *Workshop Notes of KDD Workshop on Data Mining Methods for Anomaly Detection*.

3. C. Brodley, P. Chan, R. Lippmann, and B. Yurcik (editors) (2004). *Workshop Notes of CCS Workshop on Visualizaton and Data Mining for Computer Security*.

4. P. Chan, V. Kumar, W. Lee, and S. Parthasarathy (editors) (2003). *Workshop Notes of ICDM Workshop on Data Mining for Computer Security*.

5. P. Chan, S. Stolfo & D. Wolpert (editors) (1999). *Integrating Multiple Learned Models for Improving and Scaling Machine Learning Algorithms*. Special issue in *Machine Learning*, 36(1&2).

6. H. Kargupta and P. Chan (editors) (1998). *Working Notes of KDD Workshop on Distributed Data Mining*.

7. P. Chan, S. Stolfo, and D. Wolpert (editors) (1996). *Working Notes of AAAI Workshop on Integrating Multiple Learned Models for Improving and Scaling Machine Learning Algorithms*.

Other Publications

1. P. Chan (2010). "Machine Learning for IT Security." Encyclopedia of Machine Learning, pp. 637-639.

2. P. Chan, R. Menezes, D. Mitra, E. Ribeiro, and M. Silaghi (2007). "Intelligent Systems at Florida Tech." IEEE Intelligent Informatics Bulletin, 8(1):5-6.

3. D. Margineantu, S. Bay, P. Chan, and T. Lane (2005). "Data mining methods for anomaly detection KDD-2005 workshop report." ACM SIGKDD Explorations Newsletter, 7(2): 132-136.

4. S. Stolfo, W. Lee, P. Chan, W. Fan, and E. Eskin (2001). "Data Mining-based Intrusion Detectors: An Overview of the Columbia IDS Project." *SIGMOD Record*, 30(4):5-14.

5. H. Kargupta and P. Chan (1999). "The Distributed Data Mining Workshop." *AI Magazine*, 20(1):126.

6. P. Chan (1999). "A non-invasive learning approach to building web user profiles." *Proc. 2nd Annual NASA KSC Partners in Education and Research Conference*, pp. 49-51.

7. P. Chan (1991). "Machine learning in molecular biology sequence analysis." Technical Report CUCS-041-91, Dept. of Computer Science, Columbia University.

PhD Thesis and Master's Paper

1. P. Chan (1996). "An extensible meta-learning approach for scalable and accurate inductive learning." PhD Thesis, Dept. of Computer Science, Columbia University, (Technical Report CUCS-044-96).

2. P. Chan (1988). "A critical review of CN2: A polythetic classifier system." Master's Paper, Dept. of Computer Science, Vanderbilt University (Technical Report CS-88-09).

GRANTS

1. "An NVIDIA Titan V system for student projects on machine learning and data analytics." P. Chan. Rockwell Collins, $6,000, 2018.
2. "Accent Analytics: Opportunity Timeline." P. Chan. Accent Technologies, $104,000, 2016-18.
3. "Understanding Student Learning in Online Courses with Data Mining." P. Chan and J. Pritchard, Florida Tech, $3,960, 2015-16.
4. "CS4HS Workshop at Florida Tech." P. Chan. Google, $12,500, 2013.
5. "CS4HS Workshop at Florida Tech." P. Chan. Google, $11,787, 2012.
6. "Project EMD-MLR: Educational materials development through the integration of machine learning research into senior design projects." G. Anagnostopoulos, P. Chan, V. Kepuska, and K. Ports. NSF, DUE-0341601, $99,996, 2004-06.
7. "Adaptive learning for real-time expert systems in monitoring and control." B. Buckley and P. Chan. NASA, NAS10-02044, $500,000, 2003-05.
8. "Adaptive learning for real-time expert systems in monitoring and control." B. Buckley and P. Chan. NASA, $99,800, 2001-02.
9. "A data mining approach for building cost-sensitive and light intrusion detection models." W. Lee, S. Stolfo, and P. Chan. DARPA, F30602-00-1-0603, $1,791,903, 2000-03.
10. "Fraud and intrusion detection for financial information systems using meta-learning agents." S. Stolfo, FSTC, and P. Chan. DARPA, F30602-96-1-0311, $1.5M, 1996-99.

PhD/MS THESES

PhD Dissertation Advising

1. "Data Mining Algorithms for Decision Support Based on User Activities." Ebad Ahmadzadeh. PhD, Florida Tech, July, 2018.
2. "Machine Learning for Classifying Malware in Closed-set and Open-set Scenarios." Mehadi Hassen. PhD, Florida Tech, May, 2018.
3. "Machine Learning for Host-based Anomaly Detection." Gaurav Tandon. PhD, Florida Tech, 2008.
4. "Learning Implicit User Interest Hierarchy for Web Personalization." Hyoung Kim. PhD, Florida Tech, 2005.
5. "A Machine Learning Approach to Detecting Attacks by Identifying Anomalies in Network Traffic." Matthew Mahoney. PhD, Florida Tech, 2003.

MS Thesis Advising

1. "Using a Personalized Machine Learning Approach to Detect Stolen Phones." Huizhong Hu, MS, Florida Tech, 2015.
2. "Identifying Student Behavior for Improving Online Course Performance with Machine Learning." Makoto Mori, MS, Florida Tech, 2015.
3. "Detecting Harmful Hand Behavior with Machine Learning from Wearable Motion Sensor Data." Lingfeng Zhang, MS, Florida Tech, 2015.
4. "Estimating Effectiveness of Twitter Messages with a Personalized Machine Learning Approach." Xunhu Sun, MS, Florida Tech, 2015.

5. "Semantically-Driven Search Techniques for Learning Boolean Program Trees." Nick Miller, MS, Florida Tech, 2013.
6. "Large-scale Non-linear Regression within the MapReduce Framework." Ahmed Khademzadeh, MS, Florida Tech, 2013.
7. "Using a Randomized Regression Approach to Estimate Hospital Admissions" Kleber Garcia, MS, Florida Tech, 2011.
8. "Incrementally Learning Rules for Anomaly Detection." Denis Petrusenko. MS, Florida Tech, 2009.
9. "Personalized Web Search by Using Learned User Profiles in Re-ranking." Jia Hu. MS, Florida Tech, 2008.
10. "Learning States for Detecting Anomalies in Time Series." Stan Salvador. MS, Florida Tech, 2004.
11. "Modeling Web User Interest with Implicit Indicators." Ki-Sub Jung. MS, Florida Tech, 2001.
12. "MSPL: A Protocol Language for Generating Client-Server Software." Melvin Douglas. MS, Florida Tech, 2000.
13. "Generating E-Coupons Based on User Profiles." Deepinder Singh. MS, Florida Tech, 2000.
14. "Intelligent Software Agents in Ecommerce: Automated Grocery Shopping." Rishi Gupta. MS, Florida Tech, 1999.
15. "AGI: A Communication Architecture for Mobile Agents." Mohammad Samarah. MS, Florida Tech, 1999.
16. "Complexity of Adaptive Spatial Indexing for Robust Distributed Data." Matt Mahoney. MS, Florida Tech, 1998.

PhD Dissertation Committees

1. Gengbo Liu (Advisor: Dr. Debasis Mitra)
2. "Automatic Design of Feistel Ciphers Using Constraint Techniques" Venkatesh Ramamoorthy. PhD, Florida Tech, 2010.
3. "Cost-sensitive, scalable and adaptive learning using ensemble methods." Wei Fan. PhD, Columbia University, 2000.
4. "A semantic net implemented with synchronized neurons for binding and inferencing." Mark Atkins. PhD, Florida Tech, 2000.

MS Thesis Committees

1. "Changing the Modulus of Secret Sharing, Accessing Arrays of Secrets and Incentive Mixnets." Timothy Atkinson. MS, Florida Tech, 2007.
2. "Keyword Spotting Using Normalization of Posterior Probability Confidence Measures." Rachna Vargiya. MS, Florida Tech, 2005.
3. "Identifying Multi-pair Complementary Patterns in DNA Sequences." Hyoung-Rae Kim. MS, Florida Tech, 2001.
4. "Effective Maintenance of Search Engine Databases." Seung Kwon Kim. MS, Florida Tech, 2000.
5. "A Real-Time Interactive Three Dimensional Rendering System." Constantinos Loizides. MS, Florida Tech, 1996.

INVITED TALKS

- "Machine Learning and Cybersecurity." Analytics Exchange, Northwestern University, Chicago, IL, 2018.
- "Modeling multiple time series anomaly detection." NASA Conference on Intelligent Data Understanding, Washington, DC, 2008.
- "Machine learning for anomaly detection." National Security Research Institute (NSRI) and Electronics and Telecommunications Research Institute (ETRI), S. Korea, 2007.
- "Learning rules for anomaly detection." Culiacan Institute of Technology, Mexico, 2005; UC, Davis, 2004; MIT Lincoln Lab, 2003; IBM TJ Watson Research, 2003; Florida International Univ, 2003.
- "A non-invasive learning approach to building web user profiles." Tufts Univ., 2000; Boston College, 2000; Northeastern Univ., 2000; Southern Methodist Univ., 2000.
- "An extensible meta-learning approach for scalable and accurate inductive learning." Univ. of Maryland, Baltimore County, 1995; Brigham Young Univ., 1995; Florida Tech, 1995.

HONORS

- Research Excellence Award, Dept of Computer Sciences, Florida Tech, 2005.
- Nominated for best paper awards, *Thirteenth Intl. Conf. Parallel and Distributed Computing and Systems* (2001).
- Honorable Mention (runner-up to best paper) in Applied Research, *Third Intl. Conf. on Knowledge Discovery and Data Mining* (1997)
- **Columbia University**: Full-tuition Assistantship with stipend (1988-95)
- **Vanderbilt University**: Full-tuition Assistantship with stipend (1986-88)
- **Southwest Texas State University**: Top-five finalist for Lyndon B. Johnson Outstanding Senior Award (1986), Emmie Craddock Scholarship (1985-86), Southwest Texas State University Scholarship (1984-85), and Computer Science Association Scholarship (1984-85).

PROFESSIONAL ACTIVITIES

Research Proposals

- Panelist, *NSF*, 2003 (ITR), 2009 (TC), 2010 (IIS, CDI), 2013 (IIS), 2016 (GRFP), 2017 (STEM+C)
- Reviewer, *Australian Research Council, Discovery Project*, 2004, 2018.
- Reviewer, *NASA Intelligent Systems Program*, 2000, 2003, 2004.
- Reviewer, *US Civilian Research and Development Foundation for the Independent States of the Former Soviet Union*, 2003.
- Panelist, *NASA Advanced Cross Enterprise Technology Development*, 2000.

Journals

- Associate Editor, *ACM Transactions on Knowledge Discovery in Data*, 2017-present.
- Associate Editor, *Knowledge and Information Systems*, 2004-present.
- Editorial review board member, *Journal of Database Management* (1998-present).
- Co-editor, *Journal of Machine Learning Research* special issue on *Machine Learning for Computer Security*, 2006.
- Co-editor, *Machine Learning Journal* special issue on *Integrating Multiple Learned Models for Improving and Scaling Machine Learning Algorithms*, 1999.
- Reviewer, *ACM Transactions on Information and System Security*, *ACM Transactions on Intelligent Systems and Technology*, *ACM Transactions on Knowledge Discovery in Data*, *Computers and Security*, *Data Mining and Knowledge Discovery*, *Data and Knowledge Engineering*, *Decision Support Systems*, *IEEE Concurrency*, *IEEE Expert*, *IEEE Intelligent Systems*, *IEEE Transactions on Dependable and Secure Computing*, *IEEE Transactions on Knowledge and Data Engineering*, *IEEE Transactions on Neural Networks*, *IEEE Transactions on System, Man, and Cybernetics*, *Information Fusion Journal*, *Information Processing Letters*, *International Journal of Information Security*, *Journal of Computing*, *Journal of Experimental and Theoretical Artificial Intelligence*, *Journal of Parallel and Distributed Computing*, *Journal on Artificial Intelligence Research*, *Machine Learning*, *Nerocomputing*, *Security and Communication Networks*, *User Modeling and User-Adapted Interaction*, *World Wide Web*.

Conferences, Workshops, and Tutorials

- Organizing Committees:
  - Workshop Co-Chair, *SIAM Intl. Conf. Data Mining (SDM)*, 2007.
  - Program committee vice chair, *IEEE Intl. Conf. Data Mining (ICDM)*, 2006.
  - General Co-Chair, *19th Intl. FLAIRS Conf.*, 2006.
  - Publicity Chair, *SIAM Intl. Conf. Data Mining (SDM)*, 2005.
  - Co-chair, *KDD Workshop on Data Mining Methods for Anomaly Detection*, 2005.
  - Co-chair, *CCS Workshop on Visualization and Data Mining for Computer Security*, 2004.
  - Co-chair, *ICDM Workshop on Data Mining for Computer Security*, 2003.
  - Local arrangement chair, *IEEE Intl. Conf. Data Mining (ICDM)*, 2003.
  - Workshop chair, *ACM Intl. Conf. Knowledge Discover and Data Mining (KDD)*, 2000.
  - Co-chair, *KDD Workshop on Distributed Data Mining*, 1998.
  - Co-chair, *AAAI Workshop on Integrating Multiple Learned Models for Improving and Scaling Machine Learning Algorithms*, 1996.
- Program Committees:
  - *IEEE Intl. Conf. on Data Mining (ICDM)*, 2001-05, 2007, 2009-13, 2016-present.
  - *IEEE Intl. Conf. on Big Data (BigData)*, 2013-present.
  - *IEEE Intl. Conf. on Machine Learning and Applications (ICMLA)*, 2010-present.
  - *Intl. Conf. on Data Science and Advanced Analytics (DSAA)*, 2015-17.
  - *AAAI National Conf. Artificial Intelligence (AAAI)*, 2007; Doctoral Consortium, 2014-16.
  - *ACM Intl. Conf. Knowledge Discovery and Data Mining (KDD)*, 2000, 2003, 2006-09.
  - *SIAM Intl. Conf. Data Mining (SDM)*, 2001-04, 2006-09.
  - *ACM Intl. Conf. on Information and Knowledge Managment (CIKM)*, 2010-13.

- *IEEE Intl. Conf. Tools with AI (ICTAI)*, 2011-15.
- *IEEE Intl. Congress on Big Data*, 2014.
- *IEEE Intl. Conf. on Big Data Science and Engineering (BDSE)*, 2014-15.
- *Intl. Conf. Health Informatics (HEALTHINF)*, 2014-17.
- *Workshop on a Mining Multiple Information Sources, ACM Intl. Conf. on Knowledge Discovery and Data Mining (KDD)*, 2007.
- *Meta-learning Workshop, 16th Intl. Conf. Machine Learning*, 1999.
- *High Performance Data Mining Workshop, Intl. Parallel Processing Symposium & Symposium on Parallel and Distributed Processing*, 1999 & 2000.
- *Workshop on Parallel and Distributed Data Mining, 2nd Pacific-Asia Conference on Knowledge Discovery and Data Mining*, 1999.

- Tutorials:
  - "Data Mining for Computer Security." C. Brodley & P. Chan. *SIAM Intl. Conf. on Data Mining*, 2004.
  - "Data Mining for Computer Security." C. Brodley & P. Chan. *ACM Intl Conf. on Knowledge Discovery and Data mining*, 2003.

Books

- Reviewer, *Handbook of Information Security* and *Introduction to Data Mining.*

Organizations

- Member, *Association for Computing Machinery (ACM)* and *American Association for Artificial Intellignece (AAAI).*

UNIVERSITY SERVICES

- Graduate Admission Committee, Chair (2000-present)
- Upsilon Pi Epsilon (CS Honors Society) Advisor (1995-present)
- University Research Council (2004-2010)
- Graduate Committee (1998-99, 2005-2010)
- Faculty Senator (2001-02)
- Graduate Comprehensive Exam Committee (1999-2002)
- Hiring Committee (1999-2000)
- Undergraduate Committee (1998-99)
- Initiated and conducting a tutorial on "Problem Solving and Software" for weak first-year undergraduate students (Spring 1997)
- Curriculum Committee (1996-98)