

CHOTIRAT 'ANN' RATANAMAHATANA, Ph.D.

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CONTACT INFORMATION	Permanent Address: 434 Soi Pattanakarn 44 Suanluang Bangkok 10250 Thailand Tel: 02-722-6248; Fax: 02-722-6249; Mobile phone: 09-499-9400
RESEARCH INTERESTS	Machine Learning & Artificial Intelligence, Database/Data Mining/Information Retrieval and Knowledge Discovery, particularly on time series data, including classification, clustering, indexing, anomaly detection, and visualization.
EDUCATION	<ul style="list-style-type: none">• University of California, Riverside, California, USA Fall 1999 – Spring 2005. Ph.D. in Computer Science (Defense completed: April 15, 2005) Dissertation Title: <i>Improving Efficiency and Effectiveness of Dynamic Time Warping in Large Time Series Databases.</i> Advisor: Dr. Eamonn J. Keogh• Harvard University, Massachusetts, USA Fall 1998 – Spring 1999. M.S.C (Computer Science) Advisor: Dr. Stuart M. Shieber• Carnegie Mellon University, Pennsylvania, USA Fall 1994 – Spring 1998. B.S. in Computer Science, Double Minors in Mathematics and Music (with University Honors and College Honors) Dissertation Title: <i>Evaluating What is Natural for Beginners</i> Advisor: Dr. Brad A. Myers• The Madeira School, Virginia, USA Fall 1993 – Spring 1994 High School Diploma• Triam Udom Suksa School, Bangkok, Thailand 1990 – 1993 High School Diploma
WORK EXPERIENCES	<ul style="list-style-type: none">• Lecturer Sep. 2005 – present Computer Engineering Department Chulalongkorn University• Research Assistant Jul 2003 – present University of California, Riverside Advisor: Dr. Eamonn Keogh Work on and supervise various time series data mining projects• Teaching Associate (Lecturer) Sep. 2004 – Dec. 2004 University of California, Riverside CS166 Database Management Systems (Course page archive: http://www.cs.ucr.edu/~eamonn/ratana/CS166_F04/)

WORK
EXPERIENCES
(continued)

- **Research Intern / Contractor** Jul 2004 – Sep. 2004
ISCA Technologies
Mentors: Dr. Agenor Mafra-Neto and Dr. Reginald Coler
Researched, implemented, and built a prototype for a mosquito classification system based on the Fourier Analysis of wingbeat frequencies; assisted in writing the \$800,000 grant proposal to the National Institutes of Health (NIH) and U.S. Army for research and development of “Automated Mosquito identification System to Support Timely Decision-Making”.
- **Teaching Assistant** Jan 2000 – Jun 2003
University of California, Riverside
Taught/supervised lab/discussion sections of undergraduate-level computer science courses.
Classes taught: CS8 Introduction to Computing, CS10/CS12 Introduction to Computer Science for Science, Math, and Engineering I/II (C++/Visual Studio.NET), CS14 Introduction to Data Structures and Algorithms (Unix/Linux), CS141 Intermediate Data Structures and Algorithms, CS150 The Theory of Automata and Formal Languages.
- **Business Analyst** (part time) 1999 – present
Alpha Management Consultant Co., Ltd.
Helped evaluating new ideas and initiatives, facilitating business development, research efforts, and technology. Thai-English translator for Purchasing and Supply Chain Digest magazine.
- **Research Intern** Jun 1997 – Aug 1997
Shin Corporation Pub. Co., Ltd.
Electronic Commerce Services (EDI)
Database Programming, client visits, retail business researches, analysis, and implementation for Electronic Data Interchange (EDI) services.
- **Perl Programmer** Jun 1996 – Aug 1996
Internet Thailand Co., Ltd. Under supervision of NECTEC
Programming in Perl to monitor internet traffic for ‘inet’ domain.
- **Course Assistant** 1995 – 1996
Carnegie Mellon University
Teaching 21-127, programming in Mathematica® for undergraduate students in computer science and mathematics.
- **Student Intern** Sep. 1993 – Jun 1994
Wheat First Security, Washington DC
Supervisor: Marcia Simpkins
Researched on various company profiles, valuable information for the stock data analysis.
- **Piano Instructor** (part time, at the age of 14) 1989 – 1993
Siam Kolakarn Music School
Teaching piano from beginner to advanced level.

2006

- Ada Wai-Chee Fu, Eamonn Keogh, Leo Yung Hang Lau, **Chotirat Ann Ratanamahatana**, and Raymond Chi-Wing Wong. [Scaling and Time Warping in Time Series Querying](#). VLDB Journal (to appear).
- Anthony Bagnall, **Chotirat Ann Ratanamahatana**, Eamonn Keogh, Stefano Lonardi, and Gareth Janacek. [A Bit Level Representation for Time Series Data Mining with Shape Based Similarity](#). Data Mining and Knowledge Discovery Journal (DMKD). DOI: 10.1007/s10618-005-0028-0. Springer-Verlag.
- Eamonn Keogh, Stefano Lonardi, **Chotirat Ann Ratanamahatana**, Li Wei, Sang-Hee Lee, and John Handley. [Compression-based data mining of sequential data](#). Data Mining and Knowledge Discovery Journal (DMKD). Springer-Verlag.
- **Chotirat Ann Ratanamahatana**. [Speech Audio Retrieval Using Voice Query](#). In Proceedings of 9th International Conference on Asian Digital Library (ICADL), Kyoto, Japan, November 27-30.
- **Chotirat Ann Ratanamahatana**. [Developing a Decision Support System for a Dove's Voice Competition](#). In Proceedings of 10th International Conference on Knowledge-Based & Intelligent Information & Engineering Systems, Bournemouth, UK, October 9-11.
- Vit Niennattrakul and **Chotirat Ann Ratanamahatana**. [Clustering Multimedia Data Using Time Series](#). In Proceedings of International Conference on Hybrid Information Technology (ICHIT), Cheju Island, Korea, November 9-11.
- **Chotirat Ann Ratanamahatana**. [Searching Speech Audio Content by Voice](#). In Proceedings of 10th International Conference on Knowledge-Based & Intelligent Information & Engineering Systems, Bournemouth, UK, October 9-11.
- Xiaopeng Xi, Eamonn Keogh, Christian Shelton, Li Wei, and **Chotirat Ann Ratanamahatana**. [Fast Time Series Classification Using Numerosity Reduction](#). In Proceedings of 23rd International Conference on Machine Learning (ICML 2006), Pittsburgh, PA, June 25-29.

2005

- Leo Yung Hang Lau, Ada Wai-Chee Fu, **Chotirat Ann Ratanamahatana**, and Eamonn Keogh. [Scaling and Time Warping in Time Series Querying](#). In Proceedings of 31st International Conference on Very Large Data Bases (VLDB), Trondheim, Norway, August 30-September 2.
- Nitin Kumar, Venkata Nishanth Lolla, Eamonn Keogh, Stefano Lonardi, **Chotirat Ann Ratanamahatana**, and Li Wei. [Time-series Bitmaps: A Practical Visualization Tool for Working with Large Time Series Databases](#). In proceedings of SIAM International Conference on Data Mining (SDM), Newport Beach, CA, April 21-23.
- **Chotirat Ann Ratanamahatana** and Eamonn Keogh. [Three Myths about Dynamic Time Warping Data Mining](#). In proceedings of SIAM International Conference on Data Mining (SDM), Newport Beach, CA, April 21-23.
- **Chotirat Ann Ratanamahatana**, Eamonn Keogh, Anthony J. Bagnall, and Stefano Lonardi. [A Novel Bit Level Time Series Representation with Implications for Similarity Search and Clustering](#). In Proceedings of 9th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), Hanoi, Vietnam, May 18-20.

PUBLICATIONS
(continued)

- Li Wei, Nitin Kumar, Venkata Nishanth Lolla, Eamonn Keogh, Stefano Lonardi, **Chotirat Ann Ratanamahatana**, and Helga Van Herle. [*A Practical Tool for Visualizing and Data Mining Medical Time Series*](#). In Proceedings of 18th Int'l Symposium on Computer-Based Medical Systems (CBMS), Dublin, Ireland, June 23-24.
- **Chotirat Ann Ratanamahatana**, Jessica Lin, Dimitrios Gunopulos, Eamonn Keogh, Michail Vlachos, and Gautam Das. [*"Mining Time Series Data"*](#). (BOOK CHAPTER) In O. Maimon and Rokach (Eds.), *Data Mining and Knowledge Discovery Handbook: A Complete Guide for Practitioners and Researchers*, Kluwer Academic Publishers.
- **Chotirat Ann Ratanamahatana** and Eamonn Keogh. [*Using Relevance Feedback to Learn Both the Distance Measure and the Query in Multimedia Database*](#). In Proceedings of 9th Int'l Conference on Knowledge-Based & Intelligent Information & Engineering Systems, Melbourne, Australia, September 14-16.
- Li Wei, Nitin Kumar, Venkata Nishanth Lolla, Eamonn Keogh, Stefano Lonardi, **Chotirat Ann Ratanamahatana**. [*Assumption-Free Anomaly Detection in Time Series*](#). In Proceeding of 17th Int'l Scientific and Statistical Database Management Conf. (SSDBM), Santa Barbara, June 27-29.
- Longin Jan Latecki, Vasileios Megalooikonomou, Qiang Wang, Rolf Lakaemper, **Chotirat Ann Ratanamahatana**, and Eamonn Keogh. [*Scaling and Time Warping in Time Series Querying*](#). In Proceedings of 9th European Conference on Principles and Practice in Knowledge Discovery in Databases (PKDD), Porto, Portugal, October 3-7.
- Longin Jan Latecki, Vasileios Megalooikonomou, Qiang Wang, Rolf Lakaemper, **Chotirat Ann Ratanamahatana**, and Eamonn Keogh. [*Partial Elastic Matching of Time Series*](#). In Proceedings of 5th Int'l Conference on Data Mining (ICDM), Houston, TX, November 27-30.
- **Chotirat Ann Ratanamahatana** and Eamonn Keogh. [*Multimedia Retrieval Using Time Series Representation and Relevance Feedback*](#). In proceedings of 8th Int'l Conference on Asian Digital Library (ICADL), Bangkok, Thailand, December 12-15.

2004

- **Chotirat Ann Ratanamahatana** and Eamonn Keogh. [*Using Relevance Feedback in Multimedia Databases*](#). In proceedings of the Int'l Conferences of VISual Information System (VIS) San Francisco, CA, Sept 8-10.
- Eamonn Keogh, Stefano Lonardi, and **Chotirat Ann Ratanamahatana**. [*Towards Parameter-Free Data Mining*](#). In proceedings of the tenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining. Seattle, WA, Aug 22-25.
- **Chotirat Ann Ratanamahatana** and Eamonn Keogh. [*Everything you know about Dynamic Time Warping is Wrong*](#). Third Workshop on Mining Temporal and Sequential Data, in conjunction with the Tenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-2004), August 22-25 - Seattle, WA.
- **Chotirat Ann Ratanamahatana** and Eamonn Keogh. [*Making Time-series Classification More Accurate Using Learned Constraints*](#). In proceedings of SIAM International Conference on Data Mining (SDM), Lake Buena Vista, Florida, April 22-24. pp. 11-22.

PUBLICATIONS
(continued)

- Eamonn Keogh and **Chotirat Ann Ratanamahatana**. [Exact Indexing of Dynamic Time Warping](#). Knowledge and Information Systems: An International Journal (KAIS). Vol. 7, No. 3, March 2005, Springer-Verlag London Ltd. Published Online: May 13, 2004, DOI: 10.1007/s10115-004-0154-9.

2003

- **Chotirat Ann Ratanamahatana**. [CloNI: Clustering of Sqrt\(N\)-interval discretization](#). In proceedings of the 4th International Conference on Data Mining Including Building Application for CRM & Competitive Intelligence, Rio de Janeiro, Brazil, December 2003.
- Eamonn Keogh, Bhrigu Celly, **Chotirat Ann Ratanamahatana**, and Victor Zordan. [A Novel Technique for Indexing Video Surveillance Data](#). In proceedings of ACM SIGMM 2003 Workshop on Video Surveillance, in conjunction with eleventh ACM International Conference on Multimedia, Berkeley, CA, November 2003.
- **Chotirat Ann Ratanamahatana** and Dimitrios Gunopulos. [Feature Selection for the Naive Bayesian Classifier Using Decision Trees](#). Applied Artificial Intelligence: International Journal. Vol.17, No.5-6, pp. 475-487, May-July 2003.

2002

- **Chotirat Ann Ratanamahatana** and Dimitrios Gunopulos. [Scaling up the Naive Bayesian Classifier: Using Decision Trees for Feature Selection](#). In proceedings of Workshop on Data Cleaning and Preprocessing (DCAP), at IEEE International Conference on Data Mining (ICDM 2002), Maebashi, Japan.
- **Chotirat Ann Ratanamahatana** and Dimitrios Gunopulos. [Selective Bayesian Classifier: Feature Selection for the Naive Bayesian Classifier Using Decision Trees](#). In proceedings of the 3rd International Conference on Data Mining Methods and Databases for Engineering, Finance and Other Fields, Bologna, Italy, September 2002. pp. 613-623.

2001

- John F. Pane, **Chotirat Ann Ratanamahatana**, and Brad A. Myers. [Studying the Language and Structure in Non-Programmers' Solutions to Programming Problems](#). International Journal of Human-Computer Studies, vol.54, No.2, Feb 2001, pp. 237-264.

2000

- John F. Pane, **Chotirat Ann Ratanamahatana**, and Brad A. Myers. [Analysis of the Language and Structure in Non-Programmers' Solutions to Programming Problems](#) (School of Computer Science Technical Report). Pittsburgh, PA: Carnegie Mellon University.

PROFESSIONAL
ACTIVITIES

- **Program Committee**
 - 12th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 2006. Philadelphia, USA
 - 2005 International Workshop on Mobile Systems, E-commerce and Agent Technology (MSEAT'05), in conjunction with 11th Int'l conference on Distributed Multimedia Systems. Banff, Canada.

PROFESSIONAL
ACTIVITIES
(continued)

- *Special Issue of IEEE Intelligent Systems: Data and Information Cleaning and Data Preprocessing, 2003 – 2004.*
- **Journal Reviewer**
 - *IEEE Journal of Transactions on Knowledge and Data Engineering (TKDE), 2006*
 - *Data & Knowledge Engineering (DKE) International Journal, 2006.*
 - *International Journal of Computer Systems Science & Engineering, 2006.*
 - *Data Mining and Knowledge Discovery Journal, 2005*
 - *IEEE Journal of Transactions on Knowledge and Data Engineering (TKDE), 2005.*
 - *Machine Learning Journal: Special Issue on Time Series Data Mining, 2004.*
 - *Data Mining and Knowledge Discovery Journal, 2004.*
- **Reviewer (Conferences)**
 - *12th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 2006.*
 - *25th ACM Symposium on Principles of Database Systems (PODS), 2006.*
 - *9th International Symposium on Spatial and Temporal Databases (SSTD), 2005.*
 - *11th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 2005.*
 - *18th IEEE International Symposium on Computer-Based Medical Systems (CBMS), 2005.*
 - *International Symposium on Computational and Information Sciences (CIS '04)*
 - *19th ACM Symposium on Applied Computing (SAC 2004).*
- **Reviewer (Textbook)**
 - *Database System Concepts, 5th Edition by Silberschatz, A., Korth, H.F., and Sudarshan, S.*
- **Science Fair Judge, 23rd Annual Inland Science and Engineering Fair, 2005. California County Superintendents Educational Service Association.**

EXTRA
CURRICULAR
ACTIVITIES

- **Alto-pitch choir, The Radcliffe Choral Society, Harvard University. 1998 – 1999.**
- **Alto-pitch choir, Dudley House Choir, Harvard University. 1998 – 1999.**
- **Secretary, Thai Students Association, Carnegie Mellon University.**
- **President, High School Advisory Project (HSAP), The Association of Thai Students in Science and Technology Profession in North America and Europe (ATSIST), 1997 – 1998.**
- **Coordinator, Social Interaction Department of ATSIST, 1997 - 1998.**
- **Head Committee, Public Relation Department of ATSIST, 1996 – 1997.**
- **Pianist, The Madeira School Quartet and Orchestra, 1993 - 1994.**
- **Chorus Singer, The Madeira School Choir, 1993 – 1994.**

HONORS AND
AWARDS

- **Graduate Fellowship Award, University of California, Riverside, 2004.**
- **Scholarship** from Computer Science Department, as the representative of University of California, Riverside at the *Grace Hopper Celebration of Women in Computing 2004 conference, Chicago, IL.*
- **IBM Research travel award grant, SDM 2004.**

- **10-year full scholarship recipient** from the Royal Thai Government (ทุน ก.พ. ตามความต้องการของส่วนกลาง), 1993 – 2003.
- **Outstanding Teaching Assistant Award**, for the academic year 2002 – 2003, University of California, Riverside.
- **Outstanding Teaching Assistant Award**, for the academic year 2001 – 2002, University of California, Riverside.
- **Carnegie Mellon University Honors (1998)** – awarded annually to graduating seniors at Carnegie Mellon University in recognition of their outstanding academic achievements.
- **School of Computer Science (SCS) College Honors (1998)** – awarded annually to graduating seniors in the School of computer Science in recognition of their outstanding academic achievements.
- **Phi Beta Kappa Chapter Membership Award (1998)** – Phi Beta Kappa is one of the nation’s oldest and most prestigious academic honoraries. In its 200+ year history, the honorary includes among its illuminaries renowned scholars, authors, artists, scientists, and U.S. Presidents.
- **School of Computer Science Dean’s List**, 1994 – 1998.
- **First runner-up**, Yamaha Music Festival, National Piano Competition, Thailand, 1992.
- **Outstanding Award recipient**, Yamaha Music Festival, National Piano Competition, Thailand, 1992.
- **National Champion**, Siam Kolakarn Music Festival, National Piano Competition, Thailand, 1991.

PROGRAMMING SKILLS **C/C++/STL, Pascal, Java, SQL, PostgreSQL, Perl, Python, Prolog, Lisp, ML, Unix/Linux admin., Matlab®, Mathematica®, Maple®, html, PHP, MIPS Assembly, etc.**

LANGUAGES **Equally fluent in English and Thai.**

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