Paskorn Champrasert

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Computer Architecture Research Group (Rm. 519)
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Education

Ph.D.'s Program in Computer Science (September 2006 – Present)
Department of Computer Science, University of Massachusetts, Boston
Research focus: Autonomous and adaptive distributed systems, Biologically-inspired designs for software adaptation, and Sensor networks
Academic and research adviser: Professor Junichi Suzuki

M.S. in Computer Science (May 2006)
Department of Computer Science, University of Massachusetts, Boston
Research focus: Autonomous and adaptive distributed systems, Biologically-inspired designs for software adaptation, and Sensor networks
M.S thesis title: "SymbioticSphere: A Biologically-inspired Autonomic Architecture for Self-Adaptive Network Systems"
Academic and research adviser: Professor Junichi Suzuki
GPA: 3.70

M.S. in Industrial and Organization Psychology (December 2002)
Department of Psychology, Chiangmai University, Thailand
Research focus: Organization management, Small to medium scale industries development.
M.S thesis title: "A Comparison of Personal Background and Entrepreneurial Characteristics between Entrepreneurs of Small and Medium Industries in Chiang Mai Province with High and Low Level of Success"
Advisor: Dr. Chuchai Smithikrai
GPA: 3.72

B.E. in Computer Engineering (March 1998)
Department of Computer Engineering, Chiangmai University, Thailand
Research focus: Computer networks, Hardware design, Automation control
B. Eng thesis title: "Tele Controlling and Monitoring via Internet Web Browsers"
Advisor: Pruet Boonma
GPA in Computer Engineering: 3.19

Honors and Awards

The most creative and well-prepared awards (September 2007)
Received two awards at at the 1st annual conference hosted by GBOTS (Greater Boston Organization of Thai Students and Scholars). These awards were two of the four awards of 36 accepted posters.

Professional Development Grant (September 2006)
Received a professional development grant from University of Massachusetts at Boston. This grant was provided to a paper at the 30th CompSac06, (Chicago, Il, September 2006).

Robert W. Spayne Research Grant, (May 2006)
Received an award for supporting Master's Thesis. Up to two grants are awarded each fall and spring semester by a committee of UMass graduate students.

IEEE/NSF ICNP Travel Awards, (October 2005)

Received a student travel grant to attend 13th IEEE International Conference on Network Protocols ICNP. This grant was funded by the National Science Foundation.

Professional Development Grant (May 2005)

Received a professional development grant from University of Massachusetts at Boston. This grant was provided to a paper at the 9th World Multi-Conference on Systemics, Cybernetics and Informatics (Orlando, FL, July 2005).

Thai Government National Scholarship (August 2003)

Awarded a scholarship from the Thai government to study abroad for both M.S. and Ph.D. in computer engineering or any computer related areas.

Thailand Innovation Award (February 1999)

Received the 1999 Thailand Innovation Award from the Thailand National Research Consortium for a research work on a computerized laser diode interferometer. One of the ten awardees, out of over one hundred applications.

Research Experience

Biologically-inspired Adaptive Networking (September 2004 – Present)

Department of Computer Science, University of Massachusetts, Boston
Advisor: Professor Junichi Suzuki
Have been studying a novel network architecture called the NetSphere Architecture, which models each network system (i.e. applications and middleware platforms) as a collection of software agents designed after biological concepts such as decentralization, emergence, diversity, and evolution. The primary research focus is to investigate several adaptation mechanisms that allow network systems to adapt to dynamic environmental changes in the network (e.g. changes in network traffic and resource availability). Extensive simulation work is underway using an object-oriented network simulator that contains over 13,000 lines of Java code. This research work has been supported in part by OGIS International, Inc., Electric Power Development Co., Ltd. and University of Massachusetts, Boston (through professional development grant).

Entrepreneurial Characteristics of Successful Entrepreneurs (January 2002 – September 2002)

Department of Psychology, Chiangmai University, Thailand
Advisor: Professor Chuchai Smithikrai
Investigated personal background and entrepreneurial characteristics of small-sized and medium-sized industries in the Chiangmai province of Thailand. The objective of this research was to identify the characteristics of successful entrepreneurs in order to implement human resource development strategies in northern Thailand.

Scalable Serial Port Interface for Network Servers (January 2000 – April 2000)

Department of Computer Engineering, Chiangmai University, Thailand
Advisor: Pruet Boonma
Studied a scalable serial port interface for Linux network servers. Developed an ISA (Industrial Standard Architecture) PC board, and implemented various circuits (e.g. address decode, digital I/O, analog I/O and serial port circuits) as separate add-on boards on the ISA board. This architecture allows users to add and remove any add-on boards on the base ISA board, according to user's requirements. Deployed multiple serial port boards on the base ISA board, and proved the proposed architecture improves flexibility and scalability of a Linux server. Implemented device drivers and other supporting software in C. This work was supported by Chiangmai University with the goal to provide a Linux server that handles dial up connections for students and faculty members to access the on-campus network.

Computerized Real-time Laser Diode Interferometer (1998)

Department of Computer Engineering, Chiangmai University, Thailand
Advisor: Professor Ajchariya So-no.
Investigated a computerized laser diode interferometer to sense nano-scale vibrations. Laser diodes were connected with a PC through a specialized hardware module. Developed the hardware module, and implemented a digital signal processing (DSP) and other supporting software in C to measure the interference between two laser diodes.

Using a direct hardware access mapping technique, the proposed system graphically displays interference signals in real time. This work was awarded the 1999 Thailand Innovation Award.

Web-based Flexible Framework for Remote Monitoring and Control of Electric Devices (1997)
Department of Computer Engineering, Chiangmai University, Thailand
Advisor: Pruet Boonma
Investigated a networked system that remotely monitors and controls various indoor electric devices such as electric power switches, fire alarms, temperature sensors, and sensors to inspect door's open/closed status Implemented a set of hardware and software modules to interface electric devises with an Apache web server running on a Linux server. This system allows users to configure (e.g. add and remove) monitoring and control modules in a flexible manner. Developed web server modules (e.g. CGI modules) and device drivers in C, and web-based GUI in Java. Many web-based applications have been developed and deployed on this system, such as electric power consumption monitoring and fire alarm applications. This system has been used as a teaching material for the computer architecture courses in Department of Computer Engineering, Chiangmai University. This research was supported by the National Electronics and Computer Technology Center (NECTEC), Thailand.

Teaching Experience

Teaching Assistant (2010)
Conducted Computer Architecture and Organization Laboratory. Prepared and set up the course materials, tools, and laboratory experiment.

Teaching Assistant (2009)
Graded homework and gave some advices for students in C Language Programming class.

Teaching Assistant (2008)
Graded homework and gave some advices for students in Java Language Programming class.

Teaching Assistant (2007)
Graded homework and gave some advices for students in Computer Hardware Architecture class.

Teaching Assistant (2006)
Graded homework and gave some advices in laboratory sections for students in Java Language Programming class.

Teaching Assistant (2005)
Graded homework and gave some advices for students in C Language Programming class.

Instructor for Linux Server Programming (2002)
National Science Development Agency Northern Network (NSTDA-NN), Thailand
Provided short courses on Linux server programming, operations and maintenance to software industry professionals. Covered server programming techniques, web applications programming with the Apache web server, and networking mechanisms in Linux operating system.

Part-time Lecturer (2002)
Department of Computer Engineering, Chiangmai University, Thailand
Provided an undergraduate course on introductory information systems engineering. Gave a 2 hours lecture in front of 50 students every week. One of the focuses was to teach database systems such as Microsoft SQL Server and Access.

Full-time Lecturer (1998 – 2001)
Department of Computer Engineering, Chiangmai University, Thailand
Independently taught the following eight undergraduate courses. Each course had approximately forty students.

> **Computer Engineering Lab I**
> This course covered basic C programming techniques to interface applications with hardware modules such as serial/parallel port interface and MCS 51 microcontroller.

Computer Engineering Lab II
This course covered advanced algorithms and C programming techniques to develop single-board microcontroller applications and computer automation applications. Students were assigned to design and implement PC-based instruments, such as a PC-based real-time oscilloscope that displays voltage signals from a signal generator.

Microprocessor Systems I
This course covered fundamental concepts and mechanisms in computer architecture and organization, such as microprocessor designs, microprocessor's internal operations and microprogram. Taught an assembly language implemented in the MCS51 microcontroller architecture.

Microprocessor Systems II
This course covered advanced concepts and techniques in microprocessor systems, such as interruption techniques, multi-core (e.g. dual) processor systems. Taught an assembly language implemented in the MCS51 microcontroller architecture.

Computer Hardware Design
This course covered various concepts and mechanisms in computer architecture designs, such as system buses, memory systems, cache memory systems and interrupt driven I/O mechanisms.

Instrument Systems
This course covered various concepts and techniques (e.g. measurement techniques, error management and system of measurement units) in instrument systems such as transducers and data acquisition systems.

Logic and Digital Circuits
This course covered fundamental switching theories, number systems and codes, logic gates and Boolean algebra.

Logic and Digital Circuits Laboratory
This course covered a series of digital circuit experiments. Students performed experiments using various hardware modules (e.g. IC74LSXX chips, multiplexers, de-multiplexers, ADCs, DACs) and software modules (e.g. electronics workbench and Protel).

Tutorial and Invited Talks

IT Passport Certificate 2011 Tutorial
Conducted in Corporate Activities and IT Securities topics.

Volunteer Street Fair 2011
Gave a talk and discussed in "Social Networks in Emergency Response Situation". This event is supported by United Nations Volunteers, Thai Public Broadcasting Service (TPBS), Siam Cement Group, and Siam Commercial Bank.

Industry and Government Experience

Learning Research and Development Institute, Thai Health Promotion Foundation (2010-2011)
ICT Expert
Consulted for Brain-based Learning for Kids Project to implement its information strategic planning by using online social networks. Helped the institute to mange the web content, customer relationships, and evaluate the developed content management systems.

Thailand Productivity Institute, Chiangmai, Thailand (March 2002 - December 2002)
Consultant
Consulted for CPD Packaging, CO. Ltd. to assess, propose and implement its strategic cooperate planning and human resource development. Helped the company streamline its business process to improve its manufacturing productivity. The company rapidly expanded its business in a year.

National Science and Technology Development Agency, Chiangmai, Thailand (February '01–September '01)
Project Manager, Small and Medium Enterprises (SMEs) Section
Appointed as a project manager to run various IT-related projects to improve the competitiveness of small and medium enterprises (SMEs) in northern Thailand. Investigated characteristics, opportunities and issues in SMEs, created regional government plans, and managed various projects such as e-commerce web portals, Chiangmai Software Park and an agriculture bidding system.

Publications

Book Chapter:

1. P. Champrasert and J. Suzuki, "A Biologically-inspired QoS-aware Architecture for Scalable, Adaptive and Survivable Network Systems," In *Y. Xiao and F. Hu (eds.) Bio-inspired Computing and Communication Networks*, Chapter 19, pp. 481 – 520, CRC Press, Taylor & Francis Group, ISBN 978-142-008-032-2, March 2011.

Journal Papers:

1. P. Champrasert, J. Suzuki and T. Otani, "Evolutionary High-dimensional QoS Optimization for Safety-Critical Utility Communication Networks.", In Natural Computing: An International Journal, 10(2), Springer, June 2011.

2. P. Champrasert and J. Suzuki, "Building Self-Configuring Data Centers with Cross Layer Coevolution," In *Journal of Software*, Vol. 2, No. 2, Academy Publisher, 2007. (nominated by the IEEE FTDCS 2007 conference).

3. P. Champrasert, C. Lee and J. Suzuki, "Exploring Self-Optimization and Self-Stabilization Properties in Bio-inspired Autonomic Cloud Computing", In Concurrency and Computation: Practice and Experience. (under review)

Refereed Conference and Workshop Papers:

1. P. Champrasert, J. Suzuki and T. Otani, "Constraint-based Evolutionary QoS Adaptation for Power Utility Communication Networks," In *Proc. of the 21st IEEE International Conference on Tools with Artificial Intelligence (ICTAI)*, Newark, NJ, November 2009. (25% acceptance rate)
2. H. Wada, P. Champrasert, J. Suzuki and K. Oba, "Multiobjective Optimization of SLA-aware Service Composition," In *Proc. of IEEE Workshop on Methodologies for Non-functional Properties in Services Computing*, Honolulu, HI, July 2008.
3. P. Champrasert, C. Lee and J. Suzuki, "Towards Self-Adaptive Networking with Symbiotic Behaviors of Multi-Agents," In *Proc. of IEEE International Conference on Integration of Knowledge Intensive Multi-Agent Systems (KIMAS)*, Waltham, MA, April 2007.
4. C. Lee, P. Champrasert and J. Suzuki, "Autonomic Network Applications Designed after Immunological Self-Regulatory Adaptation," In *Proc. of IEEE International Conference on Integration of Knowledge Intensive Multi-Agent Systems (KIMAS)*, Waltham, MA, April 2007.
5. P. Champrasert and J. Suzuki, "Exploring Adaptive Data Centers through Cooperative Symbiotic Networking," In *Proc. of the 11th IEEE International Workshop on Future Trends of Distributed Computing Systems (FTDCS)*, Sedona, AZ, March 2007.
6. P. Champrasert and J. Suzuki, "A Biologically-Inspired Autonomic Architecture for Self-Healing Data Centers," In *Proc. of the 30th IEEE International Conference on Computer Software and Applications Conference (COMPSAC)*, Chicago, IL, September 2006. (30% acceptance rate).
7. P. Champrasert and J. Suzuki, "SymbioticSphere: A Biologically-Inspired Autonomic Architecture for Self-Managing Network Systems." In *Proc. of the Doctoral Symposium at the 30th IEEE International Conference on Computer Software and Applications Conference (COMPSAC)*, Chicago, IL, September 2006.

8. P. Boonma, P. Champrasert and J. Suzuki, "A Biologically-Inspired Architecture for Self-Managing Sensor Networks," In *Proc. of the 3rd IEEE Confernece on Sensor, Mesh and Ad Hoc Communications and Networks (SECON), IWWAN subtrack*, Reston, VA, September 2006.
9. P. Champrasert and J. Suzuki, "Towards Green Grids: A Biologically-Inspired Adaptive Architecture for Power Efficient Server Farms," In *Proc. of the 2nd IEEE International Conference on Autonomic and Autonomous Systems (ICAS)*, Santa Clara, CA, July 2006.
10. P. Boonma, P. Champrasert and J. Suzuki, "BiSNET: A Biologically-Inspired Architecture for Wireless Sensor Networks," In *Proc. of the 2nd IEEE International Conference on Autonomic and Autonomous Systems (ICAS)*, Santa Clara, CA, July 2006.
11. P. Champrasert and J. Suzuki, "SymbioticSphere: A Biologically-Inspired Autonomic Architecture for Self-Adaptive and Self-Healing Server Farms," In *Proc. of the 2nd IEEE International Workshop on Autonomic Communications and Computing (ACC)*, Buffalo, NY, June 2006
12. P. Champrasert and J. Suzuki, "Making Grid Systems Self-Organizing and Adaptive: An Approach Leveraging Biological Concepts and Mechanisms," In Proc. *of the 4th IASTED International Conference on Communications, Internet and Information Technology (CIIT)*, Cambridge, MA, November 2005.
13. C. Lee, P. Champrasert and J. Suzuki, "iNet: A Biologically-inspired Adaptation Mechanism for Autonomic Network Applications," *In Proc. of the 2nd IEEE Upstate New York Workshop on Communications and Networking*, Rochester, NY, November 2005.
14. P. Champrasert, T. Itao and J. Suzuki, "SymbioticSphere: A Biologically-inspired Network Architecture for Autonomic Grid Computing," In Proc. *of the 2nd IEEE/Create-Net International Workshop on Networks for Grid Applications*, Boston, MA, October 2005.
15. P. Champrasert, T. Itao and J. Suzuki, "A Biologically-Inspired Symbiotic Architecture for Adaptive Networking," In Proc. of the 9th World Multi-Conference on Systemics, Cybernetics and Informatics, Orlando, FL, USA, July 2005

Refereed Poster Papers:

1. P. Champrasert, C. Lee and J. Suzuki, "SymbioticSphere: Towards an Autonomic Grid Network System," poster paper, In Proc. of the 7th IEEE International Conference on Cluster Computing, Boston, MA, September 2005.
2. P. Champrasert, C. Lee and J. Suzuki, "SymbioticSphere: An Architecture for Autonomic and Emergent Networking," In Proc. of the 2nd IEEE Upstate New York Workshop on Communications and Networking, Rochester, NY, November 2005. to appear.
3. C. Lee, P. Champrasert and J. Suzuki, "iNet: A Biologically-inspired Adaptation Mechanism for Autonomic Grids," poster paper, In Proc. of the 7th IEEE International Conference on Cluster Computing, Boston, MA, September 2005.

Unrefereed Workshop Papers, Posters and Presentations:

1. P. Champrasert and J. Suzuki, “Building Self-Configuring Data Centers with Cross Layer Coevolution”, University of Massachusetts Boston, Annual Graduate Showcase, November, 2008
2. P. Champrasert and J. Suzuki, “Evolutionary Multi-objective Optimization Algorithms for QoS Adaptation in Power Delivery Systems”, University of Massachusetts Boston, Annual Alumni Party, May, 2008
3. P. Champrasert and J. Suzuki, "SymbioticSphere: A Biologically-inspired Autonomic Architecture for Self-Managing Networking,", The 1st Annual Conference on GBOTS(Greater Boston Organization of Thai Students and Scholars), MIT, Boston, September, 2007.
4. P. Champrasert and J. Suzuki, "SymbioticSphere: A Biologically-inspired Autonomic Architecture for Self-Managing Networking," University of Massachusetts, Boston, Annual Alumni Party, May 2006.
5. P. Champrasert and J. Suzuki, "A Biologically-inspired Symbiotic Architecture for Adaptive Networking," University of Massachusetts, Boston, Annual Alumni Party, May 2005.
6. P. Champrasert and J. Suzuki, "A Biologically-inspired Symbiotic Architecture for Adaptive Networking," University of Massachusetts, Boston, Department Party, December 2004.
7. P. Champrasert, H. Guo, A. Malinowski, Y. Zheng, and J. Suzuki, "The Bio-Networking Architecture," University of Massachusetts, Boston, University Open House, October 2004

Professional Activities

Co-advisor for Graduate Individual Research Study (January 2004—2008)
Department of Computer Science, University of Massachusetts, Boston
Co-advised two master's students for their individual research/programming studies with Professor Junichi Suzuki.

Reviews for Professional Submittals:

2009
IEEE Systems Journal,
Bionetics09, SASO09, WASA09, WEBIST

2008
NSF NeTS Program,
EURASIP Journal on Wireless Communications and Networking,
IEEE Transaction on SMC,
Wireless Communication Magazine,
Journal of Computer Systems, Networks, and Communications,
IEEE AINA, IFIP-I3E, IJSNET, EC-Web, ICSOFT, IEEE ICCCN, SPECTS, E-Commerce, WEBIST, FCN Create-NET/ICST,

2007
IEEE Computer, 2007.
Elsevier Journal on Ad-hoc Network (special issue on bio-inspired computing), 2007.
E-Commerce, Bionetics, ICSOFT, DSS, ICCCN, WEBIST, AINA.
2006
Bionetics, IEEE GLOBECOM, WEBIST

2005
WEBIST,
IFIP conference on e-Commerce, e-Business and e-Government,
IEEE Transactions on Computers,
IEEE Transactions on Knowledge and Data Engineering,
Wiley Wireless Communications and Mobile Computing,
Springer Journal of Systems and Software,
IPSI Transactions on Internet Research

Social Activities

Disaster and Emergency Situation Alert Service (2008-present)
Issue the emergency situation via Social Networks (twitter, facebook, e-mail). There are 9,xxx followers for twitter account (@paipibat) and 4,xxx friends in facebook (July 2011). The service is implemented using web 2.0 technologies.

Founder of Thai Students Association at UMASS Boston in 2008

Volunteer for a Green PC Project (1999-2001)
Project coordinator and technician support, Chiangmai, Thailand
Coordinated and provided technical support for a green PC project that reuses old PCs and donates them to K-12 schools in rural areas in the northern region of Thailand. Collected more than 200 PCs, advised computer engineering students to fix and enhance them, and donated them to various K-12 schools.

Vice President of Engineering Students (1994-1998)
School of Engineering, Chiangmai University

References

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Brain-based Learning for Kids Project
Learning Research and Development Institute