

Suvimol 'Ming' Sangkatumvong

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EDUCATION

University of Southern California, Los Angeles

Ph.D. in Biomedical Engineering
Expected Graduation: 2010

M.S. in Biomedical Engineering
Graduation: May 2008
GPA: 3.82/4.00

Courses Taken:

Cardiopulmonary Physiology, Physiological Control Systems, Ultrasonic Imaging, Advanced Studies of the Nervous System, Signal and System Analysis in Biomedical Engineering, Electrophysiology, Biostatistics, Regulation of Medical Devices and Diagnostics

Washington University, St. Louis, Missouri

M.S. in Electrical Engineering
Major: Biomedical signal and Image processing
Graduation: December 2003
GPA: 4.00/4.00

Courses Taken:

Digital Signal Processing, Digital Representation of Signals, Information Theory, Tomographic Systems, Cardiovascular Magnetic Resonance Imaging, Estimation and Detection, Probability and Stochastic Processes

Chulalongkorn University, Bangkok, Thailand

B.S. in Electrical Engineering with honors
Major: Electronics
Graduation: May 2002
GPA: 3.52/4.00 (with honors)

Advanced Courses:

Biomedical Electronics, Industrial Electronics, Solid-state Sensors, Digital Circuit Design, Introduction to Microprocessors, Power Systems, Engineering Management, Manufacturing Processes

RESEARCH EXPERIENCE

Biomedical Simulations Resource, University of Southern California and Childrens Hospital Los Angeles, California

Graduate research assistant

June 2006 - Present

- Research project: Modeling of Autonomic Control in Sickle Cell Disease (SCD)
- Design experiment and data analysis method to study the function of cardiac autonomic control in SCD patients
- Conduct quantitative analysis of the effects of artificially-induced and natural episode of hypoxia on blood oxygenation in subjects with SCD
- Configure experimental instruments and conduct experiment with children with SCD
- Prepare manuscripts for publications as well as present the research at various seminars

Resource Center of Medical Ultrasonic Transducer Technology, University of Southern California

Graduate research assistant

August 2005 – June 2006

- Research project: Real-time high frequency ultrasound Pulsed Wave Doppler on an ultrasound backscatter microscopy system
- Collected data on Ultrasound Biomicroscopy (UBM) System and analyze the data on Matlab to compare the performance of various PW Doppler methods
- Developed an ultrasound Doppler system on the UBM system using LabVIEW

Electronic Systems and Signals Research Laboratory, Washington University

Graduate research assistant

January 2003 – March 2004

- Research Project: 3D ultrasound model for non-invasive temperature estimation using change in backscattered energy
- Simulated ultrasound systems in different environments using a Field Simulation Program on Matlab
- Performed experiments to correct data with different types of tissues on Terason ultrasound system at different temperature and statistically analyzed the data

Power Electronic Research Laboratory, Chulalongkorn University

June 2001 – March 2002

Research Assistant

- Research Project: Design an analog to digital converter and over all data acquisition part for a 32 channel portable Electroencephalogram using 486 Embedded System Module
- Designed hardware/software interface with parallel port
- Wrote C routines to control and collect data from the converter board

Digital System Research Laboratory, Chulalongkorn University

August 1999 – March 2000

Research Assistant

- Developed software to embed Thai-English closed caption for video systems
- Wrote schematics for electronic circuits using Protel
- Presented the project at the National Electronics and Computer Technology Center Exhibition

TECHNICAL EXPERIENCE**Envisioneering Medical Technology, St. Louis MO**

April 2004 – June 2005

Electrical Engineer

- Developed firmware for Target Scan Ultrasound System for speed and position control of a single element ultrasound transducer
- Developed Image enhancement and edge-detection technique for prostate ultrasound images
- Developed temperature-sensing system using disposable thermocouples with discrete electronic components and PIC microcontroller
- Tested and fixed issues of the main logic board, and control board of the Target Scan Ultrasound probe, and debug PCI card of the ultrasound system
- Developed an automatic accuracy testing application for positioning accuracy test using C# programming

Meditop Company, Bangkok, Thailand

April – June 2002

Engineering Trainee, Manufacturing Department

- Assisted with design and assembly of prototype dialysis reprocessor
- Tested and verified the function of the prototype
- Serviced and set up the prototype during hospital testing

Nova Biomedical Company, Waltham MA

March - May 2001

Engineering Intern, Engineering Manufacturing Laboratory

- Reconfigured an electrolyte analyzer and a co-oximeter into test fixtures for quality checks of new boards and components
- Developed a user manual and supported documents for test fixture
- Tested and analyzed anti-electrostatic discharge system

ACADEMIC EXPERIENCE**Department of Biomedical Engineering, University of Southern California**

February – May 2006

Course grader, BME320 Biomedical Electronics

- Prepared solutions for weekly homework assignments
- Graded weekly homework assignments and tracked student scores
- Consulted with students on homework related problems

Department of Electrical Engineering, Washington University

August – December 2002

Course grader, EE280 Electrical Networks

- Graded weekly homework assignments and tracked student scores
- Consulted with students and solved their academic problems

Art & Sciences Computing Center, Washington University

August – December 2002

Computing Center Consultant

- Provide customer service via telephone and face-to-face
- Provided technical support for network and computer issue

PLATFORM PRESENTATIONS AND INVITED TALKS

- December 7th, 2008: Platform Session on SCD Inflammation and Thrombosis. 50th ASH Annual Meeting and Exposition, San Francisco, CA. Topic: Sickle Cell Patients Have Exaggerated Autonomic Response to Transient Hypoxia
- Aug 22nd, 2009: Platform Session on Cardiovascular Control and Heart Rate Variability. 30th Annual International IEEE EMBS Conference, Vancouver, BC, Canada. Topic: Abnormal Cardiac Autonomic Control in Sickle Cell Disease Following Transient Hypoxia
- July 12th, 2009: Platform Session on Hemorheological Aspects of Sickle Cell Disease. 6th International Conference on Clinical Hemorheology, State College, Pennsylvania. Topic: Hypersensitivity of heart rate variability response to hypoxia in sickle cell anemia
- May 20th, 2008: Invited talk at the General Clinical Research Center (GCRC) Clinical Research Seminar at CHLA, Los Angeles, CA. Topic: Autonomic Control in Sickle Cell Anemia Patients – Hypersensitivity of Heart Rate Variability Response to Hypoxia.

PUBLICATIONS

- S. Sangkatumvong, T.D. Coates, and M. C.K. Khoo. "Abnormal autonomic cardiac response to transient hypoxia in sickle cell anemia", 2008 *Physiological Measurement* 29, 655-668.
- S. Sangkatumvong, M. C.K. Khoo., and T.D. Coates. "Abnormal Cardiac Autonomic Control in Sickle Cell Disease following Transient Hypoxia", *Proc 30th Annual IEEE EMBS Conference*, August 2008.
- S. Sangkatumvong, M. C.K. Khoo and T.D. Coates. "Hypersensitivity of heart rate variability response to hypoxia in sickle cell anemia", 13th International Congress of Biorheology and 6th International Conference on Clinical Hemorheology, July 2008.
- L. Sun, S. Sangkatumvong and K. K. Shung. "High Resolution Digital Ultrasound System for Imaging of Zebrafish", *Proceedings of the IEEE International Ultrasonics Symposium*, October 2006.
- R.M.Arthur, J.W.Trobaugh, W.L. Straube, E.G. Moros, and S. Sangkatumvong. "Temperature Dependence of Ultrasonic Backscattered Energy in Images Compensated for Tissue Motion", *Proceedings of the IEEE International Ultrasonics Symposium*, October 2003.
- J. W. Trobaugh, W. L. Straube, R. M. Arthur, E. G. Moros, and S. Sangkatumvong. "Apparent Motion and Temperature Dependence of Backscattered Energy in Ultrasonic Images," Poster, *the 21st Meeting of the North American Hyperthermia Society*, Quebec City, Canada, September 10-14, 2003.

HONORS & AWARDS

- First Prize Winner for the Oral Presentation Award, 13th Annual Fred S. Grodins Graduate Research Symposium, Los Angeles, CA April 2008
- Student Paper Competition Finalist for the IEEE EMBS 30th Annual International Conference, Vancouver, British Columbia, Canada June 2008
- NSF & IEEE EMBS Student Fellowship for the 6th International Summer School on Biocomplexity from System to Gene, Istanbul, Turkey July 2007
- University of Southern California Research Assistantship August 2005 - Present
- Washington University Research Assistantship January 2003 – December 2003
- Chulalongkorn University Graduation Honors May 2002
- Chulalongkorn University Dean's list 1999 and 2000

ACTIVITIES & MEMBERSHIPS

- Organizing committee of the 12th annual Fred S. Grodins Graduate Research Symposium, University of southern California September 2007 – April 2008
- IEEE student member 2002 - Present
- BMES student member 2007 - Present
- Thai student association, University of Southern California 2005 - Present
- Thai student association, Washington University 2002 - 2004
- Treasurer of IEEE Student Branch, Chulalongkorn University 2001 - 2002
- Student Official of Engineering Student Council, Chulalongkorn University 2000 - 2002