SOMSAK SUKITTANON, Ph.D.
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Objective

Full-time position in signal processing and embedded control

Education

University of Washington, Seattle, WA 97-04

- Ph.D. and M.S.
- Advisor: Prof. Les E. Atlas
- Research: Multimedia content classification and indexing

Honors

- *Outstanding Faculty Teaching Award* of the Department of Electrical Engineering, University of Washington, 2005
- Nominated twice for the *Outstanding Teaching Assistant* of the Department of Electrical Engineering, University of Washington, 2002 and 2004
- First class honors from KMIT'L, Bangkok, Thailand, 1994

Interests

- Multimedia classification and indexing
- Acoustic signal processing, speech enhancement
- Wireless sensor networks, embedded systems
- Data mining, machine learning

Academic Experiences

***Lecturer*, University of Washington** 04- 05

Design and taught two freshman courses, i.e. 1) Modern Digital Multimedia Processing for UW Discovery seminar program, 2) Fundamentals of Electrical Engineering

- Designed and managed a 40 hour class focusing on the application of math and science to engineering and technology
- Supervised 8 student assistants including the TA who subsequently won the TA award.

***Teaching Assistant*, University of Washington** 98 – 04

Responsible for assisting in teaching of 5 undergraduate and 2 graduate courses

- Average student evaluation is 4.2 where 5.0 is excellent
- Undergraduate courses: Real-time Application Design, Signal Processing
- Graduate courses: Advanced Digital Signal Processing

***Research Assistant*, University of Washington** 98 – 03

Responsible for the research of modulation scale theory and applications to nonstationary signal classification. Previous projects included:

- Modulation frequency features for audio fingerprinting, sponsored by the Washington Research Foundation (WRF)
- Automated modulation classification of digital communication signals, sponsored by the Air Force Research Laboratory (AFRL)
- Modulation scale: theory and application for nonstationary signal classification, sponsored by the Office of Naval Research (ONR)

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Industrial Experiences

***Principal R&D Engineer*, Virtual DSP Corporation, Washington** 04- 06

Responsible for research and development of innovative consumer systems using state-of-the-art signal processing and embedded systems

- Led investigations in the areas of software development for signal processing, wireless sensor networks, and embedded control, e.g. using devices from Texas Instruments, Analog Devices, Atmel, Motorola/Freescale, and Cypress
- Consulted on activities concurrent with development of proprietary technologies for several industries, e.g. music, medical, and consumer products
- Currently, designing and prototyping a new product using Atmel AVR, Cypress PSoC, Freescale, Perl & CGI, Microsoft Visual Basic

***Applications Developer and Cofounder*, MyCarMiles.com** 05

Responsible for the architecture, design, and implementation of Web applications.

- Built the first prototype of the automobile mileage logging system combined with Short Message Service (SMS) or wireless Internet devices
- Maintained the user database and company website

***Summer Intern*, Microsoft Research** 03

Responsible for the design and development of DSP algorithms for speech and audio classification

- Devised a technique to automatically label a large database of speech versus nonspeech
- Designed speech detection experiments using modulated complex lapped transform (MCLT) and convolutional neural networks (CNNs)

***Intern and Consultant*, Cantametrix, Washington (acquired by Gracenote)** 99 – 00

Responsible for the design and development of DSP algorithms for music retrieval applications

- Designed different types of music feature extractors and the first version of a music fingerprint system which is invariant to changes of CODEC and compression rate
- Designed music similarity measures for music classification and similarity prediction
- Developed visualization tools for DSP research using MATLAB GUI and Intel DSP library

***Summer Intern*, Virtual DSP Corporation, Washington** 99

Responsible for the software design of real-time audio processing algorithms

- Developed a digital subwoofer controller algorithm using Analog Devices ADSP 21xx family
- Developed a graphic equalizer using C/C++ and Intel DSP library

***System Engineer*, UCOM Public Limited, Thailand** 95 - 96

Responsible for design, installation, and training of communication system

- Aided in the development of several proposals including 2 winning proposals, i.e. SCADA (US$ 3M) and computer network (US$ 1M)
- Involved in field-installation of SCADA, wireless PABX, trunk radio, and computer network

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Publications *(updated 2006)*

Journals

1. **S. Sukittanon**, L. Atlas, and J. Pitton, "Modulation scale analysis for content identification," *IEEE Transactions on Signal Processing*, vol. 52, pp. 3023-3035, 2004
2. **S. Sukittanon**, L. Atlas, and S. Dame, "Enhanced modulation spectrum for in-building mechanical system monitoring," submitted to *IEEE Signal Processing Letters,* 2005
3. **S. Sukittanon**, L. Atlas, J. Pitton, K. Filali, and J. McLaughlin, "Translation-invariant modulation spectrum with application to communication signal interception," submitted to *IEEE Transactions on Aerospace and Electronic Systems,* 2006

Reviewed Conferences

4. C.W. Huang, **S. Sukittanon**, J. Ritcey, A. Chindapol, and J.N. Hwang, "An embedded packet train and adaptive FEC scheme for VoIP over wired/wireless IP networks," to be presented at *ICASSP* 2006
5. **S. Sukittanon**, L. Atlas, and S. Dame, "Enhanced modulation spectrum using space-time averaging for in-building acoustic signature identification," to be presented at *ICASSP* 2006
6. **S. Sukittanon**, L. Atlas, J. Pitton, and K. Filali, "Improved modulation spectrum through multi-scale modulation frequency decomposition," *Proc. of ICASSP,* IV_517- IV_520, 2005
7. **S. Sukittanon**, A. Surendran, J. Platt, and C. Burges, "Convolutional networks for speech detection," *Proc. of ICSLP,* II_1077-II_1080, 2004
8. A. Surendran, **S. Sukittanon**, and J. Platt, "Logistic discriminative speech detectors using posterior SNR," *Proc. of ICASSP,* V_625-V_628, 2004
9. **S. Sukittanon** and L. Atlas, "Channel compensation of modulation spectral features," *Proc. of ISCAS,* 540-543, 2003
10. **S. Sukittanon**, L. Atlas, J. Pitton, and J. McLaughlin, "Nonstationary signal classification using joint frequency analysis," *Proc. of ICASSP,* VI_453-VI_456, 2003
11. **S. Sukittanon** and L. Atlas, "Modulation frequency features for audio fingerprinting," *Proc. of ICASSP*, 1173-1176, 2002
12. M. Ostendorf, L. Atlas, R. Fish, O. Cetin, **S. Sukittanon**, and G. Bernard, "Joint use of dynamical classifiers and ambiguity plane features," *Proc. of ICASSP*, 3589-3592, 2001

Application Notes

13. **S. Sukittanon** and S. Dame, " Embedded statemachine design for PSoC™ using C programming," Cypress Semiconductor Application Notes AN2329 (part 1), AN2332 (part 2) , and AN2333 (part 3), 2005 (available at www.cypress.com)
14. **S. Sukittanon** and S. Dame, " FIR filtering design for PSoC™ with application to fast hilbert transform," Cypress Semiconductor Application Notes AN2328, 2005
15. **S. Sukittanon** and S. Dame, " 3-channel filterbank in PSoC™," Cypress Semiconductor Application Notes AN2315, 2005
16. **S. Sukittanon** and S. Dame, " n^{th} order digital IIR filtering graphical design tool for PSoC™," Cypress Semiconductor Application Notes AN2312, 2005
17. **S. Sukittanon**, "Fixed-point DSP programming using the ADSP-2100," UW-EE technical report UWEETR-2003-0026, 2003 (available at www.ee.washington.edu/techsite/papers)

US. Patents

18. "Nutritional food scale system with rapid food location user interface," applied for 2005
19. "Systems and methods that detect a desired signal via a linear discriminative classifier that utilizes an estimated posterior signal-to-noise ratio (SNR)," applied for 2004
20. "Automatic identification of sound recordings," applied for 2003

References

1. **Les E. Atlas**
   Professor
   Department of Electrical Engineering
   University of Washington

2. **Stephen G. Dame**
   President
   Virtual DSP Corporation

3. **Jenq-Neng Hwang**
   Professor
   Department of Electrical Engineering
   University of Washington

4. **Greg Mackie**
   Founder
   Mackie, and Mackie Scientific

5. **John D. Sahr**
   Professor
   Department of Electrical Engineering
   University of Washington

6. **Arun C. Surendran**
   Researcher
   Microsoft Research