

US-Vietnam Seminar: Digital Signal Processing **Final Report**

The Nation Science Foundation (NSF) award number 0634011 supported the “Digital Signal Processing Summer Seminar” (DSPSS; dspss.vef.gov), which was held at the Ho Chi Minh City University of Technology (HCMUT; <http://www.hcmut.edu.vn>), Vietnam Nation University, from June 21th to July 2nd, 2008. Other sponsors of DSPSS 2008 were the Vietnam Education Foundation (VEF; www.vef.gov), the HCMUT, Texas Instruments, and National Instruments.

The goal of the DSPSS was to foster research and training collaboration between American and Vietnamese scientists. Furthermore, DSPSS aimed to address a high level of interest and to develop competence in signal processing among students and researchers in Vietnam.

The funding from NSF supported the travel expenses of the following faculty and graduate students from the U.S.

Faculty:

1. Prof. Minh N. Do, University of Illinois at Urbana-Champaign
2. Prof. Douglas L. Jones, University of Illinois at Urbana-Champaign
3. Prof. Truong Q. Nguyen, University of California at San-Diego
4. Prof. Trac D. Tran, The Johns-Hopkins University

US Graduate Students:

1. Spencer P. Brady, University of Illinois at Urbana-Champaign
2. Erik C. Johnson, University of Illinois at Urbana-Champaign
3. Nickolaus J. Mueller, University of California at San-Diego
4. Ryan S. Prendergast, University of California at San-Diego
5. Grace R. Woo, Massachusetts Institute of Technology

(The sixth student Alex Dapore, University of Illinois at Urbana-Champaign, was planning to attend. But he had to cancel due to a last-minute problem with his airline tickets).

In addition, the NSF grant partially supported the following VEF Fellows who are currently graduate students in the U.S.

1. Thu Thi La Dang, University of Illinois at Urbana-Champaign
2. Thong Do, The Johns-Hopkins University
3. Vuong Le, University of Illinois at Urbana-Champaign
4. Diep N. Nguyen, University of California at San-Diego
5. Dzung Nguyen, The Johns-Hopkins University
6. Anh T. Van, University of Illinois at Urbana-Champaign

Three out of those 11 U.S. graduate students participating at DSPSS 2008 are female.

From the Vietnam side, there were about 60 participants, including senior undergraduate students, graduate students, instructors and researchers in Electrical Engineering and Electronics, Computer Science, Mathematics, Physics, and related areas. The participants were selected from an open, competitive, and merit-based application process through out the whole Vietnam.

The DSPSS 2008 consists of 4 short courses in Image Processing, Video Processing, Multimedia Communications, and Real-time DSP Systems. Each course lasted for three days with lectures in the morning and lab exercise sessions in the afternoons. In addition, there were seminars on current research problems in signal processing and education systems in the US and Vietnam. Following is the program of the seminars.

Saturday June 21st

- The aim and overview on the DSPSS08 (Chair and Co-chair, Prof. Thuong Le – HCMUT and Prof. Minh Do - UIUC)
- Welcome to the guests and students (Rector, Prof. Thanh Vu-Dinh - HCMUT)
- An Overview of US Engineering Education (Prof. Minh Do - UIUC)

Monday June 23rd

- The new “Computational Science and Engineering” research institute in Saigon and its vision (Prof. Thanh Truong – University of Utah)
- Signal Processing for Computational Imaging (Prof. Minh Do – UIUC)

Tuesday June 24th

- International Research and Education in Ho Chi Minh City (Prof. Phong Ho-Thanh, International University)
- Research projects by students from Vietnam
- How To Apply to US Graduate Schools (Erik Johnson and other students from US)

Wednesday June 25th

- IT on demands (Mr. Phuong Le – USA)
- How To Apply to US Graduate Schools (Erik Johnson and other students from US)

Thursday June 26th

- Compressed Sensing and Applications (Prof. Trac Tran, JHU)
- Fast and Efficient Compressed Sensing Algorithms: Structurally Random Matrices and Sparsity Adaptive Matching Pursuit (Thong Do, JHU)

Friday: June 27th

- Computer Engineering vision in Vietnam (Prof. Thoai Nam - HCMUT)
- Electrical Engineering vision in Vietnam (Prof. Phuc Nguyen-Huu – HCMUT)

Saturday June 28th

- Current Research in Video Processing (Prof. Truong Nguyen - UCSD)
- Current Research by Graduate Students from the US

Sunday June 29th

- Implementation Issues of DSP Algorithms (Hoang Nhu)
- Current Research by Graduate Students from the US

Monday June 30th

- Seminar on Peak-to-Average Power Reduction for Modern Communication Systems (Prof. Douglas Jones - UIUC).

Tuesday July 1st

- Biologically Inspired Beamforming: New Sensory Systems Based on Array Processing (Prof. Douglas Jones, UIUC)

Wednesday July 2nd

- Seminar on US Engineering Curriculum: History, Philosophy, and Design (Prof. Douglas Jones, UIUC)
- Advice on doing research (Profs. Minh Do and Douglas Jones, UIUC)

The DSPSS 2008 was a great success. The main beneficiaries of the DSPSS 2008 were the students from both the U.S. and Vietnam. The experience working along with Vietnamese students and exposing to a new culture will leave a long lasting impact on the American students. As these students will be the future leaders in science and technology in the U.S., they will greatly benefit from this global experience. We recorded more than 10 Vietnamese students from DSPSS 2008 are actively pursuing for graduate studies in the US by contacting us for recommendation letters.

The DSPSS 2008 will serve as a model for future collaborations in research and education between the U.S. and Vietnam. Again, the students are the ones that are leading the efforts. For example, on their own initiatives, students from DSPSS 2008 have setup a forum at dspss.wikispaces.com to facilitate discussion and interactions beyond DSPSS 2008. We expect many fruitful collaborations and friendships will come out from this event and its forum.