

**PROJECT CCF-0531008: "Support for K-12 female students to attend ICASSP-2005,"
PI: A.P. Petropulu**

Description of the students' visit at ICASSP

The IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) is the primary annual conference of the IEEE Signal Processing Society. It brings together around 2,000 researchers and practitioners from all over the world. The 2005 ICASSP was held at the Pennsylvania Convention Center/Marriott Hotel in downtown Philadelphia, PA, USA from March 18 – March 23, 2005.

A. Petropulu, in her capacity as the General Chair of ICASSP 2005 requested from NSF support to bring to the conference 23 middle and high school female students, along with 5 teachers, in an effort to expose them to engineering and signal processing in particular.

The girls arrived at the conference site at 11am on Sunday March 19, 2005. They were treated to a full brunch, while they heard from Professors S. Hemami (Cornell U.) and S. Douglas (Southern Methodist University) what signal processing (SP) is about. Dr. S. Hemami spoke to them on everyday uses of SP (wave around a cell phone, tivo and dvd player, GPS, the web, MRI/CT scan, etc.); using the conference program guide talked in layman's terms about the various areas in SP and described what problems might be in those areas; mentioned what are the technical skills a SP person needs (math - calculus, linear algebra, probability). Dr. S. Douglas brought to the session a harmonizer and used it to show how SP can be used in sound processing. The harmonizer is a small electronic box that takes one voice in and produces up to five voices out in harmony.

Following that, at 12:30pm the group attended the first plenary of the conference with topic "Can Hollywood survive the digital era?" by C.L. Nikias, Dean of Engineering of Univ. of Southern California. The talk focused on the use of signal processing techniques in Hollywood.

Then, the group was escorted by student volunteers on a tour around selected poster sessions of the conference and also to the exhibits.

At 4pm the group was taken to a specially designed session delivered by Professors Jelena Kovacevic of Carnegie Mellon U., Mari Ostendorf of U. of Washington and Athina Petropulu of Drexel U.. Prof. Kovacevic spoke to them in simple terms about image coding and image compression. Prof. Ostendorf gave a powerpoint presentation on speech processing (modeling/synthesis). Prof. Petropulu gave a powerpoint presentation on the use of signal processing for breast cancer detection based on ultrasound images. The session was pretty interactive, and the students seemed to be excited with what they were hearing.

At 5pm they attended the panel "Women in Signal Processing", organized by Profs. Beatrice Pesquet-Popescu (Ecole Nationale Supérieure des Télécommunications Paris), Jelena Kovacevic (Carnegie Mellon University), Athina Petropulu (Drexel University)

The Women in Signal Processing panel replaced the traditional "Women in Signal Processing" luncheon. It was a dynamic and interactive forum that celebrated the presence and achievements

of women in the area of signal processing, and discussed strategies for success in a research career. It was attended by approximately 80 conference attendees.

The panelists were

- Sidney Burrus, Dean of Engineering, Rice University
- Yasemin Yardimci Cetin, METU Ankara, Turkey
- Sheila Hemami, Cornell University
- Al Hero, University of Michigan
- Catherine Lambert-Nebout, The French Space Agency (CNES)
- Jian Li, University of Florida
- Hagit Messer-Yaron, Tel-Aviv University
- Mari Ostendorf, University of Washington
- Anna Scaglione, Cornell University
- Mihaela van der Schaar, University of California Davis
- Jennifer Q. Trelewicz, IBM Almaden Research Center

The group's visit concluded with a reception following the "women in signal processing" panel.

About recruiting students to attend the event and a note from one of the high school teachers who attended.

Recruiting students to attend ICASSP was the hardest part of this project. We tried contacting science teachers of various local schools, asking them to bring their female students to icassp. Three days before the conference we had only a couple of responses. It was then that we asked for Dr. Mun Choi's of Drexel University help; Dr. Choi had several contacts with area high school teachers through his NSF RET grant. He personally contacted teachers that he knew. In addition, Dr. Choi contributed \$1,000 to this event.

One of the teachers sent him the following message describing her icassp visit:

Dear Dr. Choi,

*Thanks for the invitation to attend the ICASSP Conference.
Four girls from Anna Shaw Middle attended the conference and
learned much about signal processing. They especially enjoyed the
the interactions with the female engineers. The engineers shared the
meaning of signal processing, the variety of career aspirations available*

in the field of engineering, the opportunities available to females and other minorities in science and engineering, and mentors for students.

In addition, the students had a chance to visit the exhibits and poster sessions. Several of the graduate students very patiently explained their poster to the girls. Many professors from universities, around the country, were impressed that middle school students have an interest in engineering. The girls will share their experience with the class in a power point presentation.

I am in the process of getting the photos developed and I will share them with you.

*Most sincerely,
Janet Hudson, Team Lead
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Some photos from the event



The group waiting for the opening plenary talk.



Group having brunch at the Marriott Hotel



Group attending Dr. S. Hemami's talk on everyday uses of signal processing.



Dr. J. Kovacevic talking to the group about image compression,



Dr. A. Petropulu talking to the group about breast cancer detection using ultrasound images.



Dr. M. Ostendorf talking to the group about speech processing



Girls attending the “Women in signal processing” panel reception