This work was supported in part by Gordon-CenSSIS, The Bernard M. Gordon Center for Subsurface Sensing and Imaging systems, under the Engineering Research Centers Program of the National Science Foundation (Award Number EEC-0909622). This material is based upon work supported by the U.S. Department of Homeland Security under Award Number 2008-ST-061-ED0001. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the views and policies of the U.S. Department of Homeland Security.

Gordon CenSSIS REU
The Bernard M. Gordon Center for Subsurface Sensing and Imaging Systems (Gordon-CenSSIS):

- Selects up to six (6) science or engineering undergraduate students to work at Gordon-CenSSIS laboratories on research projects related to the emerging technology of subsurface sensing and imaging systems. REU students have the opportunity to work for 10 weeks at Gordon-CenSSIS testbed facilities in the areas of hyperspectral underwater imaging, medical ultrasound and optical imaging, 3D biological imaging, and imaging of underground objects or environmental conditions by ground-penetrating radar or electromagnetic induction.

- Students accepted to the program receive a $4,000 stipend and apartment-style housing is provided.

Project Example
Simulation of Electromagnetic Fields and Waves
Professor Carey Rappaport, Northeastern University

• Student researchers will use computers to simulate EM fields and waves in realistic situations, including: detecting land mines and buried environmental hazards examining human microwave exposure for cancer treatment and organ thermal therapy, and designing novel special-purpose antennas.

• Research projects involve using well-established modeling and visualization software, and writing new codes in MATLAB, Mathematica, FORTRAN, and C to pre-process, post-process and accelerate algorithms.

Gordon Scholars
Gordon Scholars – The Undergraduate Pipeline

The Gordon Scholar Program offers undergraduate engineering students the opportunity to participate in paid research under the guidance of a faculty member.

We believe that all students have the potential to become part of this next generation of engineering leaders. The Gordon Scholars program gives us the opportunity to help students develop along this pathway. This opportunity, coupled with co-op and other experiential learning options, positions the students well to bring engineering solutions to the global marketplace, whether they choose to pursue a career or graduate studies upon graduation.

As a Gordon Scholars, students:
- Receive a $1,000 School bookstore voucher
- Take the High Tech Tools & Toys course during the Spring semester of their freshmen year
- Are eligible to participate in Gordon-CenSSIS and ALERT research
- Participate in Gordon-CenSSIS Student Leadership Council Meetings
- Attend Gordon-CenSSIS and ALERT Workshops with students from other partner Universities.
- Participate in Educational Outreach Activities in Boston-area middle schools and high schools.

Research Project Examples

- Participated in specific Gordon-CenSSIS meetings on research and K-12 involvement, attended the Gordon Engineering Leadership Seminars and participated in the Gordon-CenSSIS Research and Industrial Collaboration Conference;
- Enrolled in a special “High Tech Tools and Toys Laboratory” section of the “GE U111: Engineering Problem Solving and Computation” course;
- Participated in a minimum of 20 hours on either a research project under the direction of NU engineering faculty or K-12 outreach activities through collaboration with the Center for STEM Education at Northeastern University.

- During the summer 2009, several Gordon Scholars participated in the Gordon-CenSSIS Research Experiences for Undergraduates Program.

ALERT REU
Awareness and Localization of Explosives Related Threats (ALERT): The Bernard M. Gordon Center for Subsurface Sensing and Imaging Systems (Gordon-CenSSIS) and the Awareness and Localization of Explosives-Related Threats (ALERT) Center of Excellence conduct REU programs that provide opportunities for undergraduate students to participate in research which complements their undergraduate studies. Participants engage in captivating research opportunities for ten weeks at the campuses of Gordon-CenSSIS and ALERT partner universities working in laboratories and test bed facilities. Through participation in group seminars and workshops led by active research scientists and professional development personnel, the students gain a greater understanding of basic scientific concepts, learn how to do independent work, and gain experience in presenting technical ideas to different audiences. During the eight years of the program, there have been 102 student participants in the program.

Gordon CenSSIS and ALERT Undergraduate Programs
Bernard M. Gordon Center for Subsurface Sensing and Imaging Systems (Gordon-CenSSIS) and Awareness and Localization of Explosives Related Threats (ALERT)

Northeastern University’s (NU) Bernard M. Gordon Center for Subsurface Sensing and Imaging Systems (Gordon-CenSSIS) and the Awareness and Localization of Explosives-Related Threats (ALERT) Center of Excellence conduct REU programs that provide opportunities for undergraduate students to participate in research which complements their undergraduate studies. Participants engage in captivating research opportunities for ten weeks at the campuses of Gordon-CenSSIS and ALERT partner universities working in laboratories and test bed facilities. Through participation in group seminars and workshops led by active research scientists and professional development personnel, the students gain a greater understanding of basic scientific concepts, learn how to do independent work, and gain experience in presenting technical ideas to different audiences. During the eight years of the program, there have been 102 student participants in the program.