Awareness and Localization of Explosives-Related Threats (ALERT)

A Department of Homeland Security Center of Excellence

Overview of the ALERT Program

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ALERT
AWARENESS AND LOCALIZATION OF EXPLOSIVES-RELATED THREATS

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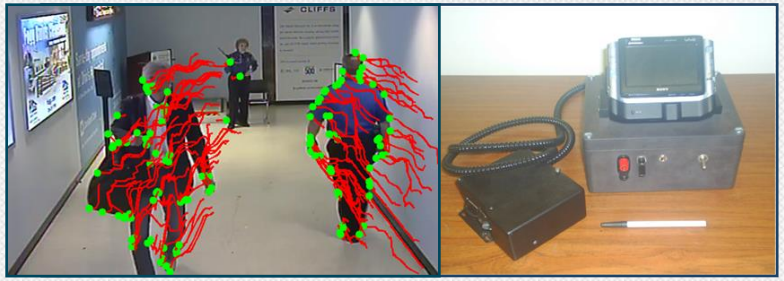
So What? Who Cares?

- ALERT's Mission
  - Scope: explosive related threats to the homeland.
  - Components: TSA, CBP, Coast Guard, Secret Service, S&T
  - Venues: airplanes, light rail, subways, buses, cargo
  - Technologies: sensors, algorithms
  - Partners: Boston University, Purdue, URI, Notre Dame, Duke, UPRM, Wash. State,
- ALERT's success in last ~10 years
  - ADSA workshops
  - Unclassified datasets
  - Algorithms: reconstruction, ATR, video analytics
  - Sensors: Swabs, K9 Training Aids
  - Industry Collaboration for Transition to the Field
  - Trained MS/PhD students
- ALERT **Collaboration-Leverages Basic Ordering Agreement (Task Orders)**
  - CBP sample projects:
    - Datasets (real and simulated)
    - ATR for cargo
    - Tunnel detection
    - Video Analytics monitoring
    - AIT screening
  - Performers: from ALERT Partners and will assemble partners from other institutions as necessary.
  - Contact me for contractual and technical details (m.silevitch@northeastern.edu, cell 617-821-3461)

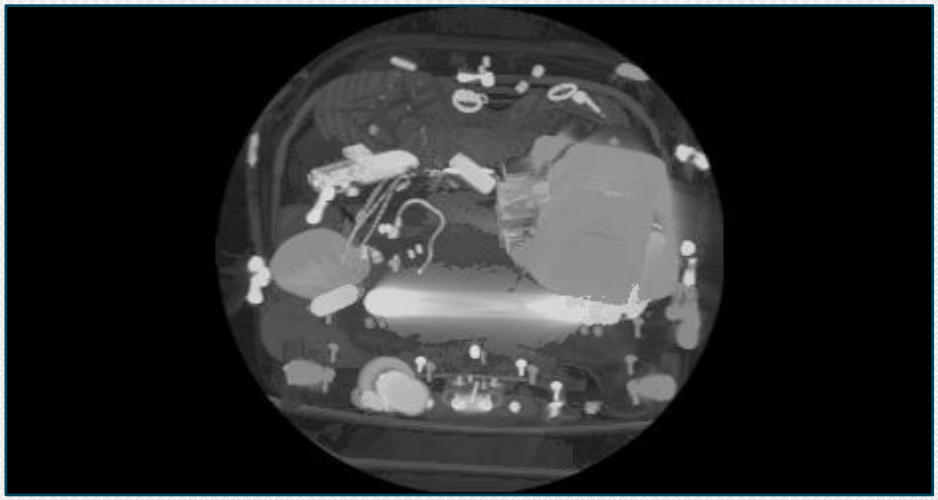
ALERT is Guided by Grand Challenges Relevant to the Homeland Security Enterprise

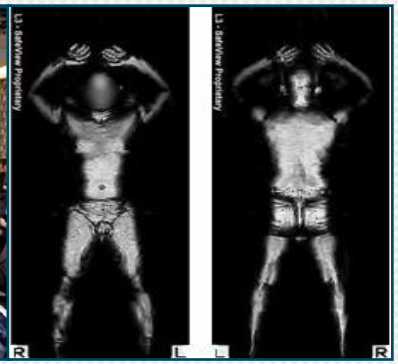
- ✓ **C1:** Characterization & Elimination of Illicit Explosives
- ✓ **C2:** Actionable Remote Trace and Vapor Chemical Detection
- ✓ **C3:** Ultra-Reliable Screening
- ✓ **C4:** Effective > 50 meter Stand-Off Discovery and Assessment
- ✓ **C5:** Seamless Transition of Research to the Field



ALERT Advanced Development for Security Applications (ADSA): Builds a Strong Third Party Community

- **Informs DHS Planning and Identifies Transition Gaps**
- **Topics have Included:**
  - Segmenting Volumetric CT Data
  - Advanced Imaging Technology (AIT)
  - Explosives Detection Using CT Image Reconstruction
  - Automated Threat Recognition
- **Outcomes:**
  - A Collaborative Community
  - Identification of Technology Gaps
  - Strategic Studies Reports
  - Comprehensive Data Sets to Test New Approaches
  - Future Directions for DHS Research





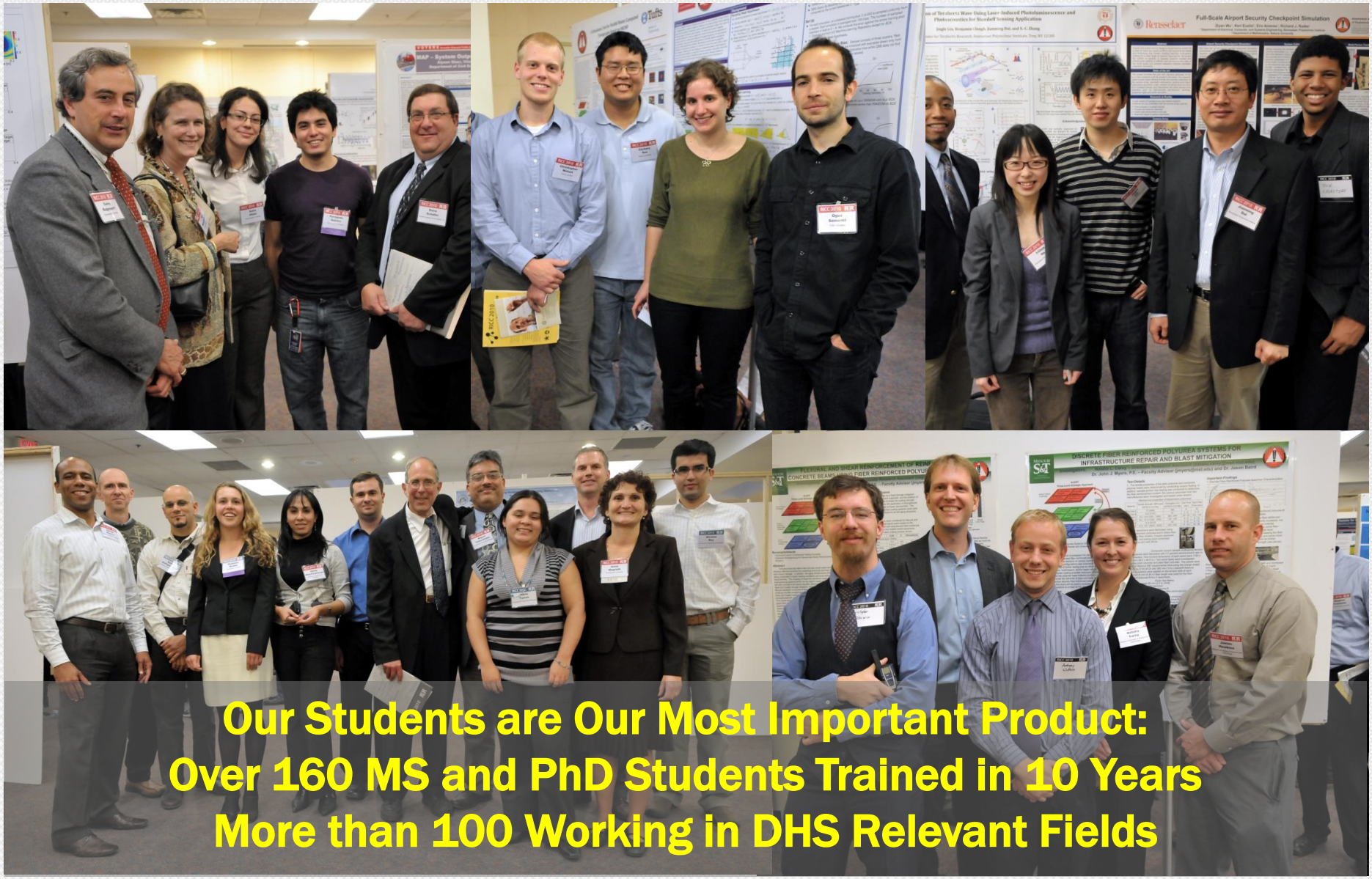
A New NEU Research, Outreach & Training Facility:
Enables More Effective Collaboration With Stakeholders

KOSTAS
Research Institute
for Homeland Security

$12 Million Gift to NEU by Alumnus, George Kostas:

- **A Centerpiece for the 14 Acre Burlington Campus**
  - Easy Access for Many New England Security Vendors
  - Venue for Workshops & Conferences
    - Campus Facilities: 300+ person auditorium, 30 classrooms
    - Kostas Facility: 100 person conference room
  - DHS relevant meetings:
    - TSA, FEMA, ICE, Coast Guard, and FBI meetings held to date
    - Secret Service meeting in planning stage
    - Venue for future multi-COE collaboration meetings
- **Supports Translational Research for Faculty & Industry Collaborators-ALERT CLASP Lab**
- **Allows for both Open and Restricted Research, e.g., System Vulnerabilities**
- **Certification for Classified Work:**
  - Approval granted by Defense Security Services (DSS)

ALERT Trained Students: The Next Generation of Professionals Who Will Help Safeguard Our Nation



Our Students are Our Most Important Product:
Over 160 MS and PhD Students Trained in 10 Years
More than 100 Working in DHS Relevant Fields

ALERT: A Major DHS Resource that Ties Together Research, Education & Transition to the Field