

Center for Advanced Technology in Telecommunications (CATT)

Director: Shivendra S. Panwar



Mission

- The NY State Office of Science, Technology and Academic Research (NYSTAR) has designated Polytechnic Institute of NYU as the New York State Center for Advanced Technology in Telecommunications and Distributed Information Systems for the period 2004-2014. Several researchers at Columbia University are affiliated with CATT.
- The mission of the Center is to stimulate economic development in information technology through research and education.

CATT Activities: R&D

- **Media**
 - including multimedia, video coding and streaming, distributed applications like search engines, P2P, network control plane and management, power systems.
 - **NYU collaboration:** Games for Learning (Microsoft)
- **Security**
 - Emphasis on network and system security, crypto systems and hardware, VoIP security, video surveillance, wireless security, network resilience
 - **NYU collaboration:** Cross-disciplinary center focusing on business, behavioral, and policy aspects in addition to security technology
- **Wireless / WICAT**
 - Radio propagation and interference, wireless location technologies, RFID, OFDM, medium access control (MAC) for personal, local, metropolitan and cellular networks, cooperative networks, battery power conservation.
 - **NYU collaboration:** Wireless Hospital workshop

CATT Activities: Education/ Training

- Executive MS Programs
- MS Program in Telecommunication Networks
- Short Courses/ Web courses

Media

- **Area Director: Prof. Keith Ross**
- **Technology Areas**
 - Multimedia applications over IP: VoIP, mobile multimedia
 - P2P: measurement, video on demand, digital rights management
 - Distributed applications: web search engines, network management and analysis, on-line tutorial technology, gaming
 - Multimedia/imaging applications: image watermarking/data mining, video coding and streaming
- **Recent Highlight**

Inauguration of the NY State funded Center for Innovation for Technology and Entertainment (CITE)

Security

- **Area Director: Prof. Ramesh Karri**
 - Professor Nasir Memon directs the National Security Agency Center for Excellence in Information Assurance Education and Research at Poly, the only such center in NY State
- **Technology Coverage**
 - Security hardware, crypto hardware, security processes, network security, intrusion detection, DoS, network resilience, network forensics, system security, attacks on software, Java2EE security, code obfuscation, disk forensics, visual passwords, steganography
- **Education**
 - NSF/NSA Scholarship For Service (SFS) program
 - Development of ISIS and VITAL labs
- **Recent Highlight**
 - Grant from NYSTAR for an E-CAT (Enhanced Center for Advanced Technology) in Cybersecurity.

Wireless

- **Area Director: Prof. Frank Cassara**
- **National Science Foundation Industry/University Collaborative Research Center (NSF I/UCRC): Wireless Internet Center for Advanced Technology (WICAT).**
Director: Prof. Henry Bertoni
- **Technology Focus**
 - WiFi: Location tracking, QoS enhancements, ad hoc mode, sensor management, OFDM, IEEE 802.11n (MIMO-OFDM), cooperative communications
- **Recent Highlight:**
 - Poly's work in cooperative communications has garnered paper awards, NSF grants and is now making an impact in the IEEE standard for WiMax

CATT's Industry Partners

- CATT's mission:
 - Acts as a industry-university partnership facilitator
 - Invests seed money in research areas which may be of interest to industry
 - Provides infrastructural facilities
 - Fellowships for graduate students
 - Tracks results for NY State
- We currently have active projects with about 15 to 20 companies
- The type of projects vary: specialized studies, exploratory research, applied research, prototype development, advanced software development
- These are typically contracts with individual or group of faculty members

Sample of companies working with CATT

- AFP
 - Alcatel-Lucent
 - AT&T Labs
 - Cisco
 - Con Edison
 - Digital Assembly
 - Huawei
 - IBM
 - InfoValue
 - InterCast
 - InterDigital
 - KeySpan Energy
 - MapInfo
 - MITRE
 - Mitsubishi Labs (MERL)
 - Mitsubishi Labs (MERL)
 - Mobile Matrix
 - Motorola
 - Northrop-Grumman
 - Philips Labs
 - Samsung
 - SIAC
 - SIPquest
 - SMARTS/EMC
 - Thomson
 - US Army (CERDEC)
 - Verizon
- We receive \$1 million annually from corporate sources.
 - CATT generates over \$40 million in revenues in New York State; a return of \$4 for every dollar invested by New York State.

Benefits to industry partners from working with CATT

- Accessing ideas and resources outside of the corporation
- Working with some of our best students
- Willing to match dollars on new projects from NY companies
- For CATT Associates, free slots in our Short Course Series
- Startup companies
 - Brooklyn Enterprise for Science and Technology (BEST) incubator
 - Columbia's Science and Technology Ventures (S&TV)

Innovation, Invention and Entrepreneurship (i2e)

- *Innovation*: research and ideas with impact
- *Invention*: creation of product or service that meets some need
- *Entrepreneurship*: taking the product or service to the market
- Poly's focus on i2e mirrors CATT's aims