

# Center for Advanced Technology in Telecommunications (CATT)

Director: Shivendra S. Panwar























# Mission

- The NY State Office of Science, Technology and Innovation (NYSTAR) has designated Polytechnic Institute of NYU as the New York State Center for Advanced Technology in Telecommunications and Distributed Information Systems. 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, social networks, advertising technology, video coding and streaming, distributed applications like search engines, P2P, data centers, network control plane and management, power systems.
- **Security**
  - Emphasis on network and system security, crypto systems and hardware, VoIP security, video surveillance, wireless security, network resilience
- **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.

## CATT Research Areas

Emerging Tech Challenges	Wireless	Media & Network Applications	Cyber Security	NYU
Intelligent Transportation Systems				
New Media Applications				
Smart Grid				
Wireless Healthcare				
Network Security				

# Media

- **Area Director: Prof. Torsten Suel**
- **Technology Areas**
  - Multimedia applications over IP: VoIP, mobile multimedia
  - P2P: measurement, video on demand, digital rights management
  - Games Innovation Lab/Center of Innovation for Technology and Entertainment
  - Multimedia/imaging applications: image watermarking/data mining, video coding and streaming
  - Web applications: web search engines, social networks, computational advertising
  - Networking: data centers, network management and analysis,
- **Recent Highlight**
  - Creation of NY City Media Lab (Executive Director: Roger Neal)
  - Hiring of key senior faculty in this area

# 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
  - Cyber Security Awareness Week (CSAW)
- **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**
  - NSF IGERT award for interdisciplinary research in this area

# 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. Shivendra Panwar
- **Technology Focus**
  - Indoor Localization, HSDPA, sensor management, intermodulation distortion mitigation, multi-cell MIMO or CoMP, cooperative communications, video over wireless
- **Recent Highlight:**
  - NSF's Global Environment for Network Innovations (GENI) project for the next generation Internet
  - New faculty member: Sundeeep Rangan, co-founder of Flarion (now part of Qualcomm)

# 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

- Alcatel-Lucent
- AT&T
- Cisco
- Con Edison
- Dialogic
- Digital Assembly
- Huawei
- IBM
- InfoValue
- InterDigital
- KeySpan Energy
- MapInfo
- MITRE
- Mobile Matrix
- Motorola
- Northrop-Grumman
- ooVoo
- Philips Labs
- Samsung
- Secure Hardware
- SIAC/ NYSE
- SMARTS/EMC/VM Turbo
- Thomson
- US Army (CERDEC)
- Verizon
- Vivic

- We receive \$1 million annually from corporate sources.
- CATT generates over \$40 million in revenues in New York State; a return of four tax dollars for every tax 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
- Startup companies
  - Brooklyn Enterprise for Science and Technology (BEST) and Varick Street incubators
  - Columbia Technology Ventures (CTV)
  - NYU Venture Fund (Frank Rimalovski)