الجامعة المصرية اليابانية للعلوم والتكنولوجيا
E-JUST
Egypt-Japan University of Science and Technology
エジプト日本科学技術大学

The Wireless Research Center @ E-JUST

Moustafa Youssef

Egypt-Japan University of Science and Technology
(E-JUST)

www.ejust.edu.eg

EJUST

- Joint university between the government of Egypt and government of Japan
- Owned by the Egyptian government
  - Has its own rules
  - Set by a joint BoT
- With the vision of becoming a regional university
  - Serving the Middle East and Africa
- Started as a graduate only university
  - 7 Engineering programs
  - 2 Business and Humanities programs
- Located in Alexandria, Egypt
- Japanese faculty on campus all year round
  - Participating in various research and teaching activities
- Full scholarship to students
  - Research assistantships only

The Wireless Research Center

Vision

- Establishing a world-class cross-disciplinary research center
  - With close-ties to the industry
  - Both at the national and international levels
- Provides both basic and applied research in wireless networking and communications
  - Their applications and hardware implementations

Groups

- Three inter-related core groups covering different stages of wireless system development
  - Wireless Networking Group
  - Wireless Communications Group
  - Radio Frequency Design Group

Team

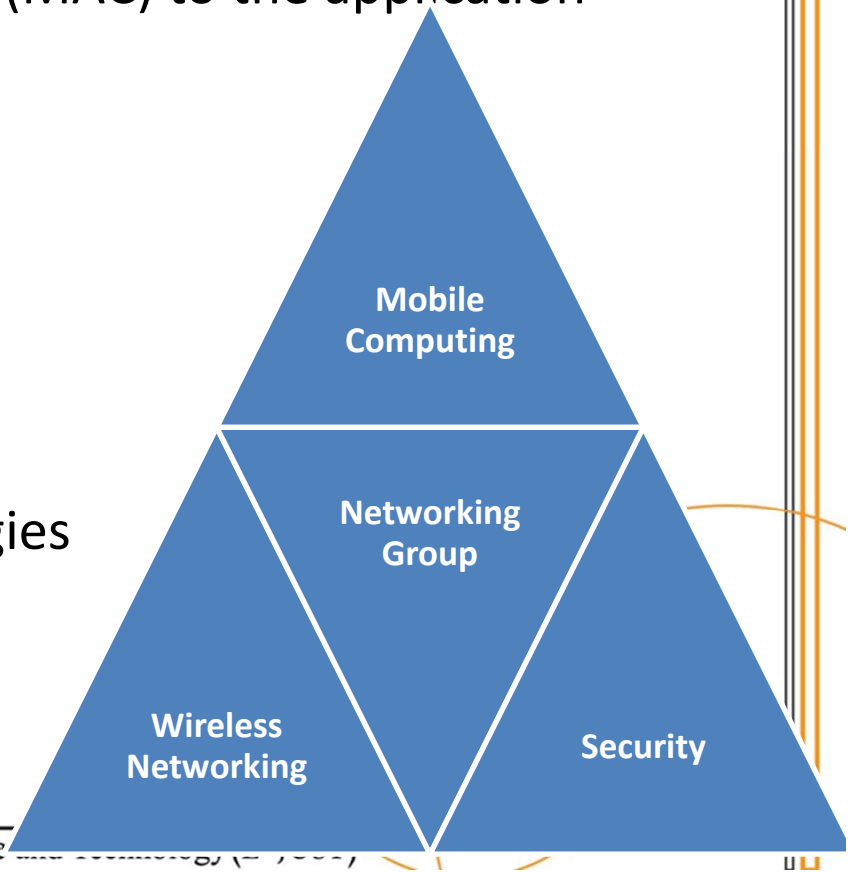
- Three faculty
- 15 students
  - 3 Ph.D.
  - 12 M.Sc.
- Alumni and collaborators

I. Wireless Networking Group

Directed by: Moustafa Youssef

- Provides both basic and applied research in wireless networking and its applications
  - From the Medium Access Control (MAC) to the application layers of the protocol stack

- Areas of interest
  - Mobile computing
  - Wireless networking
    - Sensor, RFID, vehicular, etc
  - Location determination technologies
  - Wireless networking security



II. Wireless Communications Group

Directed by: Maha Elsabrouty

- Provide theory, algorithms, protocols, designs and implementations for next-generation wireless communication systems
  - At the physical and MAC layers

- Main research themes
  - Energy-efficient mobile broadband wireless communications
  - Intelligent vehicular networks and self-organizing networks
  - Adaptive cooperative wireless communication networks for both high throughput and delay sensitive applications

III. Radio Frequency Design Group

Directed by: Ahmed Allam

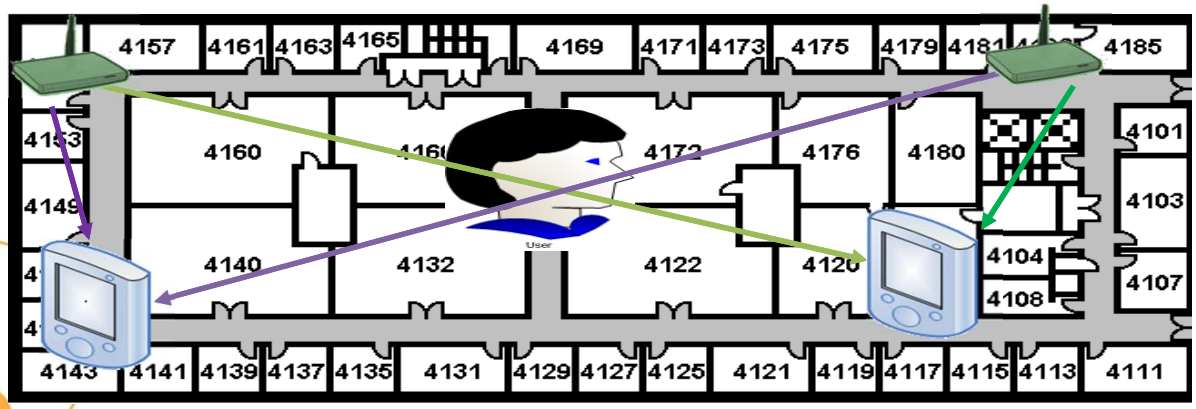
- Aims at the transformation of wireless ideas into reality products
- Addresses the design, implementation and testing of innovative radio frequency solutions in CMOS and related technologies
- Technologies covered
  - Broadband, cellular and telemetry applications

Research Projects

- Ubiquitous Indoor Localization
  - Provide a system like GPS that works in indoor environments throughout the world
  - Challenges
    - Automatic construction of indoor floorplans
    - Automatic construction of location information database
      - Use a crowd sourcing approach
      - Based on cell phones as ubiquitous sensing devices

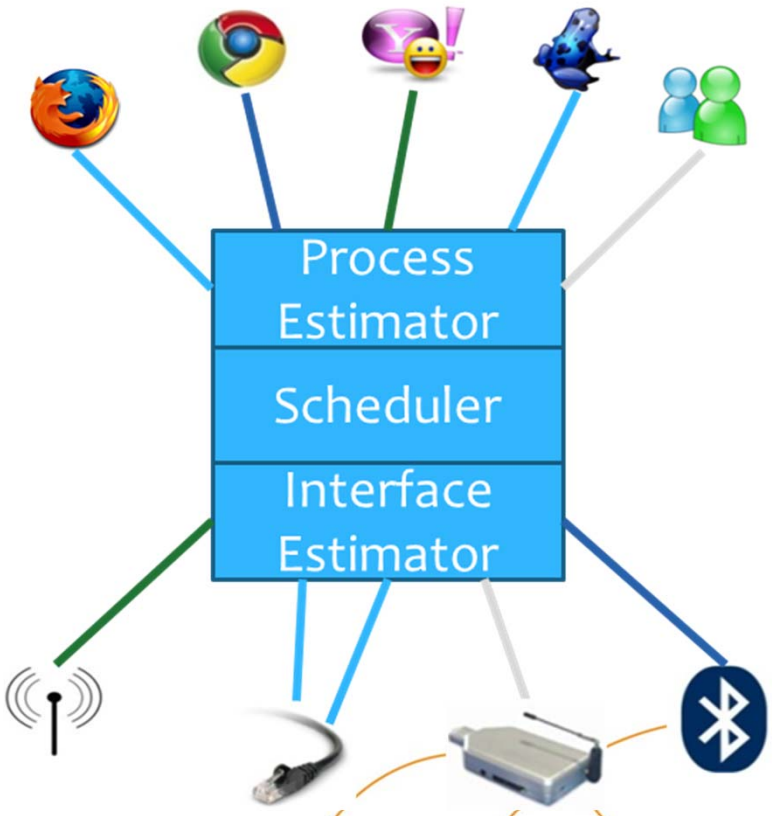
Research Projects

- Device-free Passive Localization for Wireless Environments
  - Track a person who is not carrying any devices
    - Based on her effect on the signal strength
    - Applications: intrusion detection, border protection, smart homes, traffic estimation
    - Detection, tracking, identification



Research Projects

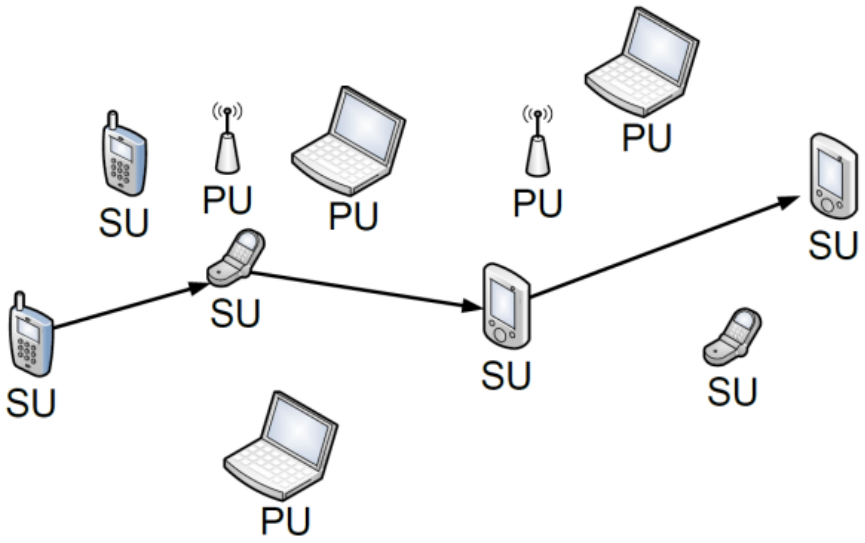
- DNIS : Dynamic Network Interface Scheduling
  - Although more than one interface may be connected on today's mobile devices
    - Only one of them is enabled
    - Restriction of current OSs (Window, Linux, IOS)
  - Deployable system (no changes to legacy systems)
    - Interface and applications characteristics estimation
    - Scheduler
    - Multi-objective
    - Distributed



جامعة كارنيجي ميلون في قطر
Carnegie Mellon Qatar

Research Projects

- Location-aided Cognitive Networks
  - Leverage location information for better performance
  - New metrics
  - Routing protocols



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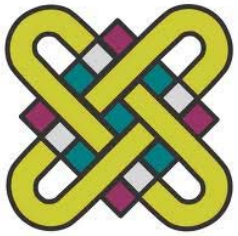
NTRA

Collaborators



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Research Funds/Supporters

Thank you !

Moustafa Youssef
moustafa.youssef@ejust.edu.eg

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Short Version

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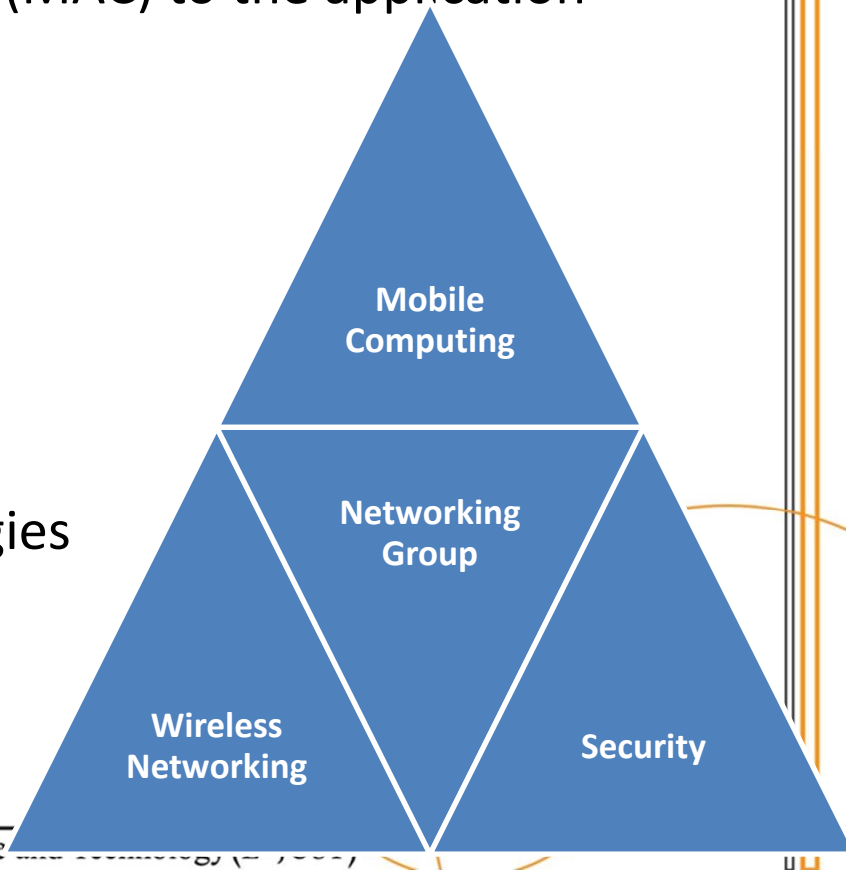

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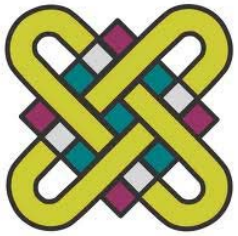

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