Faculty of Information Technology and Electrical Engineering (ITEE) & Centre for Wireless Communications (CWC)
University of Oulu, Finland
Prof. Jari Iinatti
Education Dean - ITEE
Head of CWC – Networks and Systems
University of Oulu in Brief

- Established in 1958
- Total funding 240 M€
- 8 faculties
- 14,000 students
- 2,900 employees
- ~220 professors
- ~1600 researchers/teaching personnel
- ~20 study programmes
- 18 IMPS

Faculties

- Oulu Business School
- Biochemistry and Molecular Medicine
- Humanities
- Education
- Science
- Medicine
- Technology
- Information Technology and Electrical Engineering (ITEE):
  - 12 Research Units
  - ~500 experts
  - ~40 professors
  - ~150 M.Sc. degrees annually
  - International staff > 35%
OUR BASIC RESEARCH ENABLES UBIQUITOUS WIRELESS SENSOR SYSTEMS

Disciplines
- Electronics
- Communications engineering
- Computer science and engineering
- Information processing science

Topics
- Wireless Communications
- Artificial Intelligence and Data Analytics
- Electronics, Materials, Sensors
- Software technologies
- User Interfaces, Augmented Reality, Virtual Reality
- User experience, User-centered design
EDUCATION

FIVE-YEAR PROGRAMS IN FINNISH BACHELOR + MASTER DEGREE

Electronics and Communications Engineering (55)
- Electronics Design
- Electronics, Materials and Components
- Photonics and Measuring Technology
- Communications Engineering
- RF Engineering

Computer Science and Engineering (55)
- Artificial Intelligence
- Applied Computing
- Computer Engineering

Information Processing Science (95)
- Information Systems
- Software Engineering

MORE INFORMATION: http://www.oulu.fi/itee/node/6423;
http://www.oulu.fi/tst/teraleon
EDUCATION

INTERNATIONAL MASTER’S PROGRAMS

CSE – Computer Science and Engineering (45)

BME – Biomedical Engineering: Signal and Image Processing (10, total 20)

WCE – Wireless Communications Engineering (includes 2 DD-programmes) (30+15)

GS3D – Software, Systems and Services in the Global Environment (40)

EMSE – European Master in Software Engineering (Double Degree) (15)

Bachelor Program with Nanjing Institute of Technology (NJIT) on Software Engineering (100)

FAB LAB HAS PROVEN TO BE AN EXCELLENT ENVIRONMENT FOR EVERYONE - CHILDREN, FAMILIES, TEACHERS, UNIVERSITY STUDENTS, RESEARCHERS,...

FAB LAB OULU

PRINCIPLES OF DIGITAL FABRICATION COURSE

15-17 YEAR OLD PUPILS IN THE SUMMER

SANTA CLAUS WORKSHOP

FAB LAB OULU
CWC Facts

- Founded 1995 as a research programme to improve collaboration between academia and industry
- Basic operation model for the first 10-years: funding only through competition
- Merged to the Faculty of ITEE as two separate groups:
  - CWC – Radio Technologies and
  - CWC – Networks and Systems
- Research and teaching staff: ~ 150 (10 professors)
- Very international staff – more than half non-Finns
- Total funding ~ 10 M€ / year (75% external project funding)
CWC Research Groups

- **Radio Access Techniques (RAT)**
  - Matti Latva-aho

- **Communications Signal Processing (CSP)**
  - Markku Juntti

- **RF Engineering (RFE)**
  - Aarno Pärssinen

- **Wireless Systems (WS)**
  - Ari Pouttu

- **Wireless Medical Communications (WiMeC)**
  - Jari Iinatti

- **Networking (NET)**
  - Mika Ylianttila
CWC Key Expertise Areas

- Wireless communications and networking
- Transceiver and radio frequency (RF) technologies
- Radio channels, antennas and propagation
- Optimization and algorithms
- System design, integration, verification and validation
- Wireless applications:
  - industrial internet
  - medical and health
  - smart energy grids
  - security and defense
CWC’s 5G Research

- 5G Test Network
- RF and Antenna Implementation
- Business Models
- Future Radio Access
- 5G Baseband
- Network Optimization and Management
- Spectrum Regulation and Channel Models
5G Test Network

- Open test network for co-creation (https://5gtn.fi/co-creation/).
- Main parts located in Oulu & Helsinki regions.
- Was used in EU-Korea demos at 2018 Winter Olympic Games.
- Operator grade live network with plugged in 5G prototype radios.
- Near future targets: become the first operational local micro-operator at University of Oulu Digital Campus.
National Flagship on Wireless Communications

- National Flagship for 2018-2026
- 6G Enabled Wireless Smart Society & Ecosystem (6Genesis); volume 251M€.
- Operated by UOulu, in collaboration with: Nokia, VTT, Aalto University, BusinessOulu, Oulu University of Applied Sciences.
- Flagship Director: Academy Professor Matti Latva-aho (matti.latva-aho@oulu.fi)

Wireless Connectivity
- Ultra-reliable low-latency communications
- Unmanned processes

Devices & Circuit Technology
- THz communications materials & circuits
- Unlimited connectivity

Distributed Computing
- Mobile edge intelligence
- Time critical & trusted applications

Services and Applications
- Multidisciplinary research across verticals
- Disruptive value networks

Vision 2030: Society is data driven enabled by unlimited wireless connectivity

www.6genesis.org
2014–2016
MORE THAN
500
NEW STARTUPS

540
LIFE SCIENCE
COMPANIES

450
ICT COMPANIES

18 500
HIGH-TECH JOBS