INSTITUTE OF TELECOMMUNICATIONS

Faculty of Electronics and Information Technology

Warsaw University of Technology

Division of Cybersecurity

Head of Division: Krzysztof Szczypiorski, Ph.D., D.Sc. - Associate Professor

<u>The main teaching & research activities</u>

- ➤ Theory of observing change
- ➤ Operation Technology (OT) and Internet of Things (IoT) security
- ➤ Network anomaly detection
- ➤ Open-source intelligence
- ➤ Digital system design for cybersecurity
- ➤ FPGA-based security systems
- ➤ Cryptographic protocols and crypto analytical tools
- ➤ Trust management
- ➤ Security of (multi-) agent systems
- ➤ Bio-inspired cybersecurity techniques
- ➤ Hiding information in networks (network steganography, watermarking)

Division of Telecommunication Systems

Head of Division: Krzysztof Perlicki, Ph.D., D.Sc. - Associate Professor

The main teaching & research activities

➢ Signal Processing

➢ Quality of Telecommunication Services

➢ Home, Access, Core Networks and Systems

➢ Optical Communication Technologies

➢ Smart Grid, Smart Metering

➢ Ad-hoc Sensor Networks

➢ Internet of Things

Photonic Communication Laboratory

➢ High capacity and high speed transmissions

➢ Countermeasures to optical fiber impairments

➢ All-optical signal processing

➢ Optical fiber core and access networks

➢ Multimode fiber transmission techniques

Access and Core Systems Laboratory

➢ Testing xPON, xDSL, SDH, SyncE devices and systems

➢Testing QoS and QoE of telecommunication services

➢ Preparing of new telecommunication services

➢ Defining the requirements and recommendations

Division of Teleinformatic Networks and Services

Head of Division: Artur Tomaszewski, Ph.D., D.Sc. - Associate Professor

The main teaching & research activities

➢ Network Architectures and Technologies

➢ Network Planning and Optimization

➢ New Telecom Services and Cloud Computing

➢ Mobile and Embedded Applications

Team of Architectures
& Applications for the Internet

Head of Team: Wojciech Burakowski, Ph.D., D.Sc. - Full Professor

Research areas

Available resources

- Future Internet Architectures
- QoS in IP Networks (theory and implementation)
- Internet of Things
- Network Virtualization
- Information Centric Networks
- Software Defined Networks
- Cloud Federation
- Prototyping and testing
- Performance evaluation
- Traffic Measurements

- PL–LAB wide area testbed in Poland (main R&D centres)

Proposed topics

http://www.tele.pw.edu.pl

       dydaktyka
       tematyka pracowni
       links to topics,
          some of them in English

Examples of diploma topics

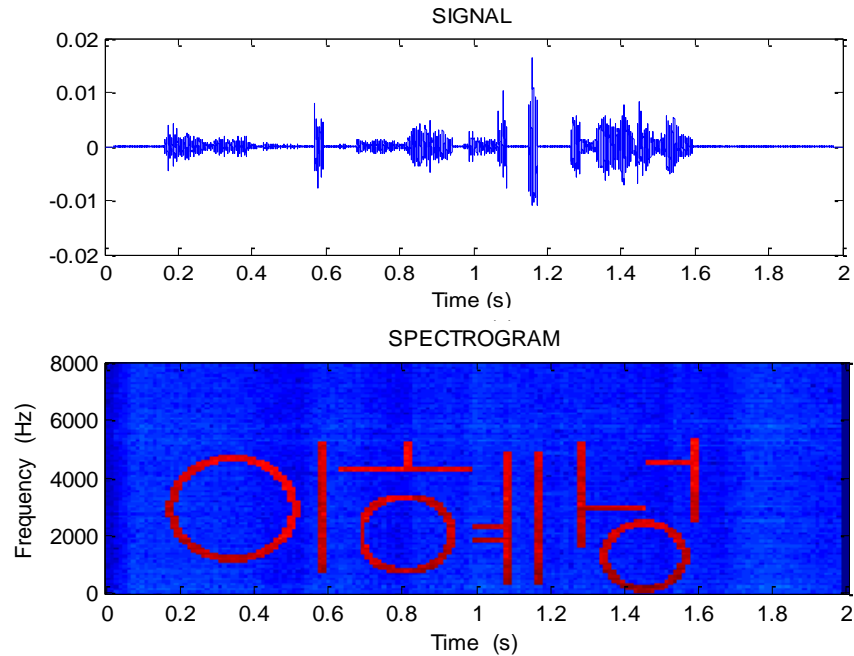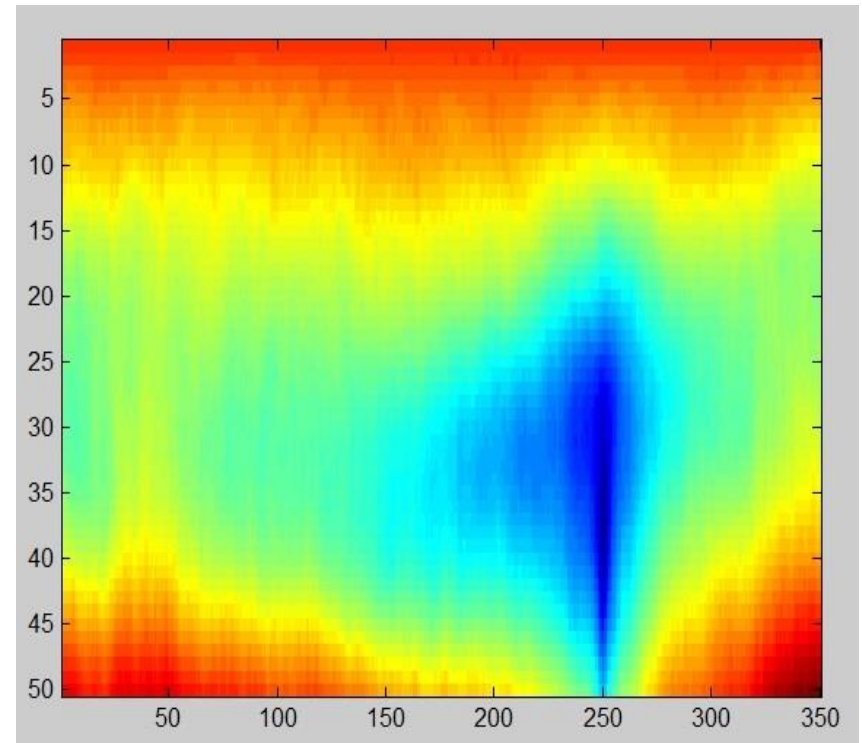- **Quality measurement of video transmission**

- **Visual speech synthesis**

Examples of diploma topics

LOGO watermarking

Separation of audio sources

The other examples

Unlicensed Mobile Access in wired and wireless networks

Modelling of MIMO system

Asymmetric Digital Subscriber Line parameters control

Design of an optical access network

Implementation of the DCT transform using the FPGA circuits

Application of fibers for temperature measurement

The intelligent house (Mobile and Embedded Applications Group)

Speech recognition

Recognition of emotions in speech signal

Protection of audio files using watermarking and fingerprinting

Speaker verification using „voice PIN"

From the list of topics

Control of taxes using Blockchain technology (A. Bąk)

Internet of Things networks (A. Bęben)

Sociotechnical systems (K. Brzeziński)

Quality of Service Internet Protocol networks (W. Burakowski)

Software Defined Networks (D. Bursztynowski)

Implementation of applications under Android (T. Czarnecki)

Internet of Things (J Domaszewicz)

Watermarking od audio and image (P.Dymarski)

Artificial Intelligence for IP network analysis (P.Gajowniczek)

IoT applications (M.Golański)

Signal detection and classification (A.Jakubiak)

Biometrics, speech processing (A.Janicki)

Cryptography (Z.Kotulski)

From the list of topics

BigData, Service oriented applications (M.Kowalczyk)

Field Programmable Gate Arrays applications (A.Kraśniewski)

LTE Advanced, 5G networks (S.Kukliński)

Access networks (S.Kula)

Internet applications (H.Kułakowski)

Networks Analysis (J.Lubacz)

5G, blockchain, Smart Cities, Smart Home (J.M.Batalla)

Software Defined Networks, optimizatiom (M.Mycek)

Wireless systems (E.Obarska)

Intelligent Building (D.Paczesny)

Machine learning for systems analysis (K.Perlicki)

Network Design (M.Pióro)

IoT applications (A.Pruszkowski)

From the list of topics

FPGA applications, cybersecurity (M.Rawski)

Blochchain, cryptography (P.Sapiecha)

Drones, wireless networks (R.Schoeneich)

Optical networks (J.Siuzdak)

IoT, wireless sensor networks (F.S.Donado)

IoT, SDN (M.Sosnowski)

SDP, lasers (G.Stępniak)

Cybersecurity (K.Szczypiorski)

Optoelectronics (J.Turkiewicz)

application development, mobile cloud, programmable

networks/SDN, network virtualization/NFV, (A,Tomaszewski)

Services (M.Sredniawa), SDN(H.Tarasiuk), programmable devices

(P.Tomaszewicz),

Satellite comm. (K.Włostowski), AI (M.Żotkiewicz)