OPEN POSITIONS FOR INCOMING STUDENTS

TSR-LAB - WIRELESS COMMUNICATIONS

The **TSR Lab** at the Dpt. of Communication Engineering of the Bilbao Engineering Faculty offers internship opportunities for international students. These stays can target a Master's Thesis, Bachelor's Thesis or simply a learning period being part of a research team working in wireless communication technologies. The specific agreement (if any) between the home university and the University of the Basque Country (UPV/EHU) will determine the academic equivalence of the stay (ECTS Credits, Language Competences, etc).

WIRELESS COMMUNICATIONS RESEARCH TRACK

The TSR laboratory is engaged in several lines of research. This proposal concerns the **Wireless Communications** research track. The variety of projects and technologies handled in this track is very wide and covers multiple applications: multimedia audiovisual systems, wireless communications, broadband mobile communications, and satellite communications. Technological contributions include physical layer technologies (waveforms, modulation, coding, service multiplexing, propagation channels, and advanced spectrum management technologies), networking (access, core, heterogeneous, mixed wired/wireless, convergence), and networking protocols.

The table contains a summary and overview of the thematic areas in which we are currently involved and some of the challenges that are being addressed through innovative scientific contributions.

WIRELESS COMMUNICATIONS FOR INDUSTRY	MULTIMEDIA NETWORKS	ML/AI AIDED WIRELESS COMMUNICATIONS
Project Examples: 1. Industrial Propagation Channels 2. Industrial Propagation Measurements 3. Waveforms for industrial wireless: Modulation, Coding, Multiplexing 4. PHY/MAC for Wireless Safety 5. Industrial Wireless System Testing 6. URLLC & MtMC 5G and Beyond	**Project Examples:** 1. Broadcast Core Networks 2. Intelligent Access Nodes: BcastNode 3. Radio Access Network Virtualization 4. 5G Tx-Rx Testbed setup 5. 5G/DTT/ATSC 3.0 Convergence Testbed 6. Streaming, Service Based Architectures, QoS/QoE	**Project Examples:** 1. Multi-stage loopback cancellation 2. AI-based channel estimator 3. AI-based cancellation 4. ML aided beamforming 5. Non-Coherent Massive MIMO 6. ML (Deep-Unfolding) applied to PHY security in wireless
Profesor: Pablo Angueira	**Profesor: Jon Montalbán**	**Profesor: Eneko Iradier.**

Each incoming student will agree on a specific research topic and work plan that covers objectives, methodology, deliverables, and a detailed timeline based on their interests and the duration of their stay. The duration of the stay is flexible and expected to be between 2 and 6 months.

METHODOLOGY AND EXPECTED RESULTS

The work methodology will be similar in all projects and will include the selection of a particular research topic, a learning period covering the state of the art, a case study definition phase, the elaboration of an analytical model/software model/hardware prototype and the study and discussion of the results.

The candidate is expected to acquire knowledge in advanced wireless communications techniques. In all cases, the acquisition of transversal competences associated with a stay in a research group will be prioritized. The student is expected to learn group work methodologies, techniques and technologies associated with the research work, handling of simulation and design tools in wireless systems, scientific report writing and presentation of results to a group of experts.

The working language will be preferably English and the acquisition of basic knowledge of Spanish will be promoted.

PROJECT TEAM AND RESOURCES

The student will join a work team consisting of professors, several PhD students, and Bachelor and Master students from UPV/EHU. Currently, the wireless technologies track comprises four professors and six PhD students, along with several undergraduate and master's degree students.

CANDIDATE PROFILES

Visiting students are expected to have standard knowledge on the topics covered during the first three years of any university degree in the fields of telecommunications, electronic engineering, computer engineering, or similar. Other profiles, such as exact sciences and applied physics, can also be considered.

Specific knowledge and experience in the topic of the incoming project is not required, as the purpose of the stay is to acquire this competence.

APPLICATIONS AND CONTACT

Applications will be considered upon reception of a CV and motivation letter to Prof. Pablo Angueira (Email: pablo.angueira@ehu.eus // Phone +34 946014001).