PhD thesis offer

The Signal Processing and Radiocommunications research group (TSR Lab) located at the School of Engineering of Bilbao of the University of the Basque Country (EHU) offers a PhD thesis position in research projects related to: **Generalization of AI models in human activity monitoring with WiFi networks**.

Funding for the thesis is assured.

Estimated starting date: October 2025

Why is this study interesting?

WiFi networks are present in almost any home, public space or industrial environment. Therefore, they are a very useful tool for monitoring the activity of people or machines from different perspectives: security, care and welfare, home automation, commercial or statistical purposes, etc. Artificial intelligence (AI) models have facilitated the implementation of this technology known as WiFi sensing. Once these models have been trained, they can anonymously classify activities (walking, sitting, lying down, falling, etc.), count, track without user interaction or detect running machines.

What is the objective of the research?

AI models are generally trained on limited data that represent a very small portion of the large variability of different locations and situations in which classification can be performed. This circumstance limits the inference capability of the models in new locations. The objective of this thesis is to develop generalization techniques of artificial intelligence models to improve the robustness of classification systems in multiple domains (e.g., different locations, days, people, etc.)

What tools will be used?

We will mainly work with neural network-based models (CNN, LSTM, Transformers, etc.) and decentralized machine learning techniques (federated learning). The AI models will be implemented using Python libraries and frameworks (PyTorch, Tensorflow, Flower, etc.) running on different computer servers with GPUs. The evaluation of the models will be performed with real measurements obtained in measurement campaigns in controlled environments and data obtained from public datasets.

If you are interested, please contact:

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