Projects for ETSIST Incoming Students - PROJECT PROPOSAL

Academic year 2023 / 2024

Project description	
Project name: Sound source localization using microphone arrays	
Academic year: 2023/24	Semester: ●Fall ● Spring
Starting date[1]: 12 September 2023 / 12 January 2024	Ending date[2]: 22 December 2023 / 31 April 2024
UPM Centre: CITSEM – Campus Sur	Hours per week: 10
Total hours: 135	Credits: 4,5

Supervisor data:	
Name: Prof. Rubén Fraile	
Department: Ingeniería Telemática y Electrónica	
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Project contents and requisite skills
The project consists in assembling, testing and using a microphone array for capturing audio signals originated at different locations in a room. In a second phase, the recorded signals will be used for evaluating the performance of diverse sound source lotcalization algorithsm already implemented in Matlab.
Candidates are expected to be proficient in basic digital signal processing techniques (digital filters, DFT, etc.), to have experience in high-level programming, and to know the basic characteristics of audio systems.

Expected learning outcomes
• Managing audio equipment: microphones, wires, connectors, acquisition systems, etc. • Recording multichannel audio. • Managing, labelling and organizing data to build a database. • Running programs in Matlab. • Analyzing numeric results. • Writing a technical/academic report describing datasets. • Performing an oral presentation of the work carried out.

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[1] Note that the starting date cannot be before the beginning of the lectures in the corresponding semester

[2] Note that the ending date cannot be after the last exam in the corresponding semester

Rules for students
a) To join the project, to follow the rules and schedule agreed with the supervisor, and to duly justify any possible absence.
b) To carry out the activities specified in the project schedule and to keep the necessary contact with the supervisor.
c) To inform to the Internship Coordinator at ETSIST, or to the Mobility Office, of any event or complaint that may arise in the development of the project.
d) To send to the Internship Coordinator at ETSIST an interim report (Annex II), a final report of the work carried out (Annex III) and the satisfaction questionnaire of the internships, according to the forms and the deadlines set in the annexes of this regulation.
e) To maintain the confidentiality of the internal information of ETSIST, Department or Center to which they have got access, as well as to not exploit the work carried out in the project without express authorization.