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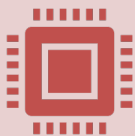
MOBILE AND SOCIAL SENSING SYSTEMS
(LM COMPUTER ENGINEERING; LM ARTIFICIAL INTELLIGENCE AND DATA ENGINEERING, #885II)

Course in a nutshell

The course is aimed at providing students with an overview of issues, solutions, methods and technologies related to mobile, wearable and social sensing systems

Students will learn the fundamentals and acquire hands-on experience with mobile computing, sensor-based systems and technologies, and social sensing applications

Learning Objectives

At the end of the course students are expected to:

- have the ability to understand key principles and techniques related to the collection, filtering and analysis of information from both mobile devices and social platforms, with a specific focus on <u>data from physical and human sensors</u>

- develop the skills required to design and implement mobile and wireless sensing applications

Prerequisites

Operating Systems

Networking

Programming skills (C++, Java,…)

Network-based programming

Methods

Teaching:

Lectures (~ 33 hours)

Seminars (~ 12 hours)

Laboratory (~ 15 hours)

Learning:

Attend lectures and seminars

Critically read, present and discuss a technical paper in-class

Design a mobile and/or sensor-based application, implement it and present/discuss it in-class (as part of a team)

Material:

This course has no textbook; besides slides of the lectures, we will cover some research papers

Material and suggested reading provided by teachers (available on Microsoft Teams)

In- class Paper Summaries and Discussion

You (as part of a team) are expected to choose and present one of the papers from the class reading list

You will be provided with guidelines in selecting a sound/significant technical paper

You should not just present the paper but, more importantly, you should try to promote a discussion on the subject

Presentations and discussions will take place during scheduled class hours (~ 26-27 April)

Final Assessment Method

Oral exam. During the oral exam you must be able to:

- demonstrate your knowledge of <u>lectures</u> and <u>seminars</u> topics
- discuss the matter thoughtfully and with <u>propriety of expression</u>
- 60% of the final score

Project demo. You must effectively demonstrate your project both through a live walk-through and a description of the problem you addressed. The description should explain why your problem is important, how you solved it, and what evidence you have

- 30% of the final score

Paper presentation. 10% of the final score.

Assessment for students who actively attend lectures and lab

Project should be implemented by actively participating to lab sessions:

- students will be organized in groups
- each group will design and implement a novel application assigned by the teacher (or discussed with him)
- the implemented application will be presented in-class

Final assessment: **only Oral exam**

+ Project demo, Paper presentation

Possibly carried out during class hours

Course Contents

Lectures will address:	Mobile platforms: Android
	Non-GPS-based localization techniques
	Publish/subscribe, Distributed Hash Tables
	Human activity monitoring/recognition
	Social Media Sources and Networks. Social Bot Detection
	Humans-as-sensors paradigm
In laboratory sessions students will exercise with:	Programming smartphone-based mobile applications
	Social bot detection techniques