

List of topics for DSD bachelor projects and thesis – 25.01.2021

P1 - Prototyping of smart gloves for CPR training

Description: The Wearable Systems Lab (aalto.fi/wearsys) is working together with University of Turku, Medical School to develop smart gloves for cardiopulmonary resuscitation (CPR) training. The smart gloves equipped with at least motion sensors and pressure sensors will be used for monitoring the quality of chest compression. In this final project, the student is expected to take care of electronic design and test of the smart gloves. Data processing algorithms have been developed already.

Instructor: Yu Xiao, yu.xiao@aalto.fi

P2: three topics (final can be discussed with instructor)

P2A - Comparison P4 versions OpenFlow, NETCONF for managing SDN networks

P2B - Design and prototype of 5G broadcast system to deliver time synchronizations

P2C - Deploy and evaluation of integration TSN into 5G system

Instructor: Jose Costa jose.costa@aalto.fi

P3: Smarter intersections or roundabouts? (up to 2 participants)

Description: A simulation analysis using VISSIM, a commercial software, in which the performance of traffic control mechanisms at intersections will be compared to that of roundabouts.

Instructor: Themistoklis Charalambous themistoklis.charalambous@aalto.fi

P4: Undersampling of 200 MHz clock signal

Description: to be detailed with the instructor

Instructor: Yusein Ali <yusein.ali@aalto.fi>

P5 – two topics

P5A - Smartwatch-mouse:

Students in this project will design a smartwatch-based input device based on acceleration. The project can be conducted jointly by multiple students, where each student focuses on a distinct sensor modality, such as acceleration, EMG, mmWave radar, image/video, etc.

P5B - VR-sign language translator

Students would develop an image-based sign-language recognition using the Microsoft Hololens II. When multiple students participate in the project, the task can be flexibly extended, by covering also

the backwards communication channel (e.g. first-person-view assistance in communicating via sign-language)

Instructor: Stephan Sigg <stephan.sigg@aalto.fi>