Multimodal Emotion Recognition in Intelligent and Autonomous Cars (5 open positions)

Background

Automatic recognition of emotions has wide implications in different applications and recently got the attention of the researchers in the field of automotive for the purpose of driver fatigue detection, and human-car interaction. Emotion recognition systems can ease the integration of Intelligent Personal Assistant (IPA) systems into the car by providing reliable feedback from occupants.

Description

In our group at the chair of Robotics, Artificial Intelligence and Embedded Systems we study the multimodal emotion recognition systems based on the behavior of the driver which use the facial expressions as the ground truth. We see the modality of facial expression as our main input to classify the emotion of occupants of the car and integrate other modalities like eye gaze, head and hand movements to the system for maintaining the robustness of the system. Currently, this system is capable of detecting the emotions of the driver with accuracy of 94%. We are actively looking for highly motivated students whom are interested in this field with relevant background in computer vision, machine learning, modeling and embedded systems to join us within the context of their guided research, bachelor or master thesis.

In order to know more about the open positions please forward a copy of your CV along with your preferred focus direction (list in below) to us, in order to set up a personal meeting and discuss the possibilities in more details.

Open Positions

The open positions for student projects (GR, BA, MA Thesis) can be focused on these domains:

- Modeling the in-cabin behavior of the driver and passengers
- Applying machine learning techniques for maintaining prediction scores
- Designing and implementing new algorithms for mapping emotions
- Designing and developing multimodal databases
- Thermal imaging with infrared cameras in “SMART” car simulator
- Integrating and implementing on embedded devices (like raspberry pi)

Equipment

All hardware equipment will be provided to the selected students (from embedded devices like raspberry pis, to high resolution cameras and real “SMART” car simulator in our lab)