

**Proposal for project topics at University of Applied Sciences Karlsruhe**

**Time frame: May/June 2018 until 13. July 2018:**

**Institute of Energy Efficient Mobility (IEEM) <https://www.hs-karlsruhe.de/ieem/>**

**KA1: Automotive Security:**

- Implementation and evaluation of different filter techniques for automotive firewalls
- Collaboration in ongoing research projects regarding to “Intrusion Detection Systems” and “End-to-End Security” for modern cars

**KA2: Vehicle on-board communication:**

- Extension of an existing lab-experiment with automotive Ethernet and CAN

**KA3: Service-oriented communication design:**

- Extension of an existing SOME/IP simulation with CANoe for service-oriented-architectures (SOA) in future cars

**KA4:** Solar radiation in a passenger compartment – comparison of vehicle measurements and predicted solar intensity in the simulation model

**KA5:** Implementation of a predictive energy calculation in the CarMaker environment for controlling auxiliary consumers and vehicles

**Institute of Refrigeration, Air Conditioning & Environmental Engineering (IKKU)**

**KA4-IKKU1:** Research Group ENGINE and COGENERATION:

Focus on Cogeneration Gas Engines (Combined Heat and Power)

- Emissions
- Efficiency
- Performance
- Life-Cycle Costs

**Smart Sensor devices:**

**KA6:** Validation of a new capacitive angle sensor for a new hand prosthesis; in cooperation with Vincent System in Karlsruhe <https://vincentsystems.de/en/>

**KA7:** Validation of a “snow quality sensor”; in cooperation with KIT in Karlsruhe <http://www.team-snowstorm.de/index.html> and the German Paralympic Team

For further details please contact: Prof. Dr. Klemens Gintner [klemens.gintner@hs-karlsruhe.de](mailto:klemens.gintner@hs-karlsruhe.de)

**Proposal for project topics at University of Applied Sciences Dresden:**

**Time frame: May/June 2018 until 13. July 2018:**

**DD-1: Literature research about state of the art algorithms for positioning in urban cities by using 3D maps and lidar information**

**DD-2: Localization and mapping (SLAM) of a vehicle in a test field based on lidar information**

Description: The goal is to create a digital map with lidar and vehicle information (velocity, curving) on a test field. Therefore a one dimensional lidar is used which already sends information about objects (like lines, road surfaces and vehicles).

Requirements: Programming skills in C++ or Python

**DD-3 Model based estimators for object detection**

Description: Basic research in model based estimators and implementation of a suitable estimator for tracking objects which are provided by a lidar and Car2X information

Requirements: Programming skills in C++ or Python

**DD-4 Meshing infrastructure object from pointclouds**

Description: We are creating a 3d model of our campus. Our focus is on infrastructure objects like building and certain landmarks. Therefore we are looking students who are interested in modelling and geo informatics.

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