Projects at University of Applied Sciences Ravensburg-Weingarten
open for international exchange students
in summer semester 2019
(sorted alphabetically by name of the professor in charge)

Professor in Charge	**Topic**	**Short description**	**Project available for students**			**Student needs good knowledge in the following fields**	**Time frame: Project can be realised within**	
			from the following fields of study	**on Bachelor level**	**on Master level**		**2.5 months**	**4 - 5 months (1 sem.)**
Lothar Berger Faculty of Electrical Engineering and Computer Science	Vertical Pendulum	Controller design and realization for balancing an vertical pendulum	Electrical Engineering, Mechatronics		X	Control Engineering, Basics of electronics		
Jörg Eberhardt Faculty of Technology and Management	3D Cameras and Machine Vision	Control of a linear stage for the characterization of 3D camera.	Optics, Mechatronics, Physics, Computer Science, others	X	X	Knowledge in programming, eventually mechanical engineering	X	X
Jörg Eberhardt Faculty of Technology and Management	Physical computing	Different Arduino-based projects available, to be discussed	Computer Science, Electrical Engineering, Mechatronics, others	X	X	Knowledge in the following topics: C programming, Arduino	X	X
Jörg Eberhardt (new) Faculty of Technology and Management	Autonomous Systems	Integration of advanced sensorial devices for the control of autonomous vehicles.	Computer Science, Electrical Engineering, Mechatronics, others	X	X	Knowledge of C++, Linux. Knowledge of ROS is helpful	X	X
Jörg Eberhardt (new) Faculty of Technology and Management	3D Printing	Design and fabrication of advanced bionic 3D models	Mechanical engineering, others possible	X	X	Good knowledge in CAD,	X	X

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Tobias Eggendorfer Faculty of Electrical Engineering and Computer Science	App development	Development of a mobile, multi-platform App with high security, reliability and privacy requirements	Electrical Engineering and IT / Applied Computer Science	X	X	A strong background in programming / mobile App programming is useful as well as experience in secure programming	X	X
Tobias Eggendorfer Faculty of Electrical Engineering and Computer Science	Penetration testing embedded systems (several projects)		Electrical Engineering and IT / Applied Computer Science	X	X	A strong background in security is a required, Assembler knowledge is useful	X	X
Tobias Eggendorfer (new) Faculty of Electrical Engineering and Computer Science	Programming of a Java-App	Java-App to support the maintenance of data processing processes directory according to GDPR	Electrical Engineering and IT / Applied Computer Science or other	X	X	Background in Java programming required	*Any frame*	*time possible*
Tobias Eggendorfer Faculty of Electrical Engineering and Computer Science	Development of a Web App	Development of a secure, GDPR-compliant web app to support international students	Electrical Engineering and IT / Applied Computer Science	X			X	
Wolfgang Ertel Faculty of Electrical Engineering and Computer Science	Robot Behaviour	The ROS package decision-making can be used to control the behaviour of a mobile robot with Finite State Machines and Behaviour Trees. The task is to evaluate this package for our needs.	Computer Science, Electrical Engineering, Mechatronics	X	X	Strong knowledge in Linux, C++/Python, Finite State Machines, ROS	X	X
Wolfgang Ertel Faculty of Electrical Engineering and Computer Science	Robot Virtual Reality	The task is to build a possibility to inspect robot visualization in virtual reality using existing technology (Oculus Rift and RVIZ).	Computer Science, Electrical Engineering, Mechatronics		X	Strong knowledge in Linux, C++/Python, ROS		X

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Wolfgang Ertel Faculty of Electrical Engineering and Computer Science	Human Movement Analysis with multiple Kinect Sensors	With the Microsoft Kinect Sensor human movement can be captured. Multiple Kinect sensors disturb themselves. The task is to find a possibility to capture a movement with multiple Kinect	Computer Science, Electrical Engineering, Mechatronics		X	Strong knowledge in Linux, C++/Python, 3D Vision,		X
Wolfgang Ertel Faculty of Electrical Engineering and Computer Science	Deep Learning for Object Recognition	Deep learning algorithms shall be used to train the object classification of a service robot	Computer Science, Electrical Engineering, Mechatronics		X	Strong knowledge in Linux, C++/Python, 3D Vision, Machine Learning, Neural Networks		X
Wolfgang Ertel Faculty of Electrical Engineering and Computer Science	Deep Learning Grasping of Objects	Deep learning algorithms shall be used for training a robot arm to grasp arbitrary objects	Computer Science, Electrical Engineering, Mechatronics		X	Strong knowledge in Linux, C++/Python, 3D Vision, Machine Learning, Neural Networks		X
Wolfgang Georgi Faculty of Electrical Engineering and Computer Science	Control theory with LabVIEW XNodes	Simplification of creating control programs in LabVIEW by using XNodes. The Purpose is to create diagrams similar to those in Matlab Simulink	Applied Computer Science, Mechatronics		X	Programming Language G (part of LabVIEW)	X	X
Martin Hulin Faculty of Electrical Engineering and Computer Science	Projects on E-Learning	Different projects available, to be discussed	Electrical Engineering and IT / Applied Computer Science/ Business Informatics	X	X	Depending on the project	X	X

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Martin Hulin Faculty of Electrical Engineering and Computer Science	Projects on Object and Graph Databases	Different projects available, to be discussed	Electrical Engineering and IT, Applied Computer Science, Business Informatics	X	X	Depending on the project	X	X
Florian Kauf Faculty of Mechanical Engineering	NOT POSSIBLE IN SS18! Development of control strategies for heat pumps	Heat pumps with all elements (compressor, heat exchanger, throttle device etc) are modelled. The system has to be controlled to optimize e.g. efficiency.	Mechanical Engineering, Mechatronics, Electrical Engineering	X	X	Control strategies, MATLAB/Simulink, Simulation		X
Florian Kauf Faculty of Mechanical Engineering	NOT POSSIBLE IN SS18! Optimization of an automotive steering system test bench	A test bench with a steering system (incl. a Mercedes Cockpit and seat) already exists. Further steering parameters should be implemented. A haptical feed-back of steering torque and driving direction should be implemented.	Mechanical Engineering, Electrical Engineering, Mechatronics	X	X	Mechanical engineering, Electrical Engineering, maybe Simulation		X
Florian Kauf Faculty of Mechanical Engineering	NOT POSSIBLE IN SS18! Modelling and simulation of heat exchangers	Heat transfer effects should be modelled and simulated e.g. with MATLAB/Simulink or CFD Software	Mechanical Engineering, Mechatronics	X	X	Thermodynamics, Simulation		X
Florian Kauf Faculty of Mechanical Engineering	NOT POSSIBLE IN SS18! Testing of components of a heat pump test bench	Doing heat transfer measurements, analysing the icing of an aluminium profile (surface of heat exchanger), doing modifi-cations at the test rig	Mechanical Engineering, Mechatronics	X	X	Thermodynamics, experimental		X

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Florian Kauf Faculty of Mechanical Engineering	NOT POSSIBLE IN SS18! Optimization of quadrocopter with camera detection	An already existing quadrocopter with remote control and a camera system should be further optimized. E.g. a sensor communication for an intelligent detection of a target (e.g. a person wearing clothes with the integrated sensor could be followed) could be developed and integrated.	Mechanical Engineering, Electrical Engineering, Mechatronics	X	X	Mechanical engineering, Electrical Engineering, maybe Simulation		
André Kaufmann Faculty of Mechanical Engineering	OBD 2 Data Collection for driving cycle analysis	Development of Android Software for mobile devices for OBD2 Collection via Bluetooth module	Electrical engineering, Software design		X	Knowledge on internal combustion engines, OBD, CAN-Bus Excellent programming skills in Java, knowledge on serial protocolls		X
André Kaufmann Faculty of Mechanical Engineering	Waterproof bone conduction hearing aid	Design and manufacture of a waterproof bone conduction hearing aid	Electrical Engineering, Measurement Engineering		X	Strong background in programming and microcontrollers required. C/C++,Java, knowledge in design and manufacture of microcontroller boards, power electronics		X
Andre Kaufmann (new) Faculty of Mechanical Engineering	Development of IOT demonstration experiments for lectures	Programming IOT experiments based on Node-RED	Electrical/ Mechanical Engineering	X	X	Knowledge of Javascript programming	x	X
Markus Pfeil Faculty of Electrical Engineering and Computer Science	Construction of Embedded System Architecture from formal Requirements	Starting from SysML requirements models an architecture and simulation of an embedded system will be created	Electrical Engineering, Computer Science	X	X	Electrical Engineering, Programming	x	x

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Markus Pfeil Faculty of Electrical Engineering and Computer Science	Creation of Embedded System Code from formal requirement model	Using the SysML model and co-Simulation of a system as a starting point, executable code for the system will be auto-created from the model.	Electrical Engineering, Computer Science		X	Programming, Simulation	X	x
Cornelia Neff (New) Faculty of Technology and Management	Research project high-tech start-ups/ venture capital	Trends and recent developments in the pharmaceutical and biotech industrie in Germany/ aktuelle Entwicklungen in der Pharma- und Biotech-Branche in Deutschland; "overview study", students could analyse/ evaluate relevant industry studies and/ or portray a couple of pharma and biotech companies	Business admin, Intl. Business Management (BM, TM)	X	X	can be prepared in German, English, French, Spanish; can also be done in teams of two or three students	X Can be	X adapted
Gerd Thieleke Faculty of Mechanical Engineering	Simulation of dynamic behaviour of isolated net in energy laboratory of HRW with matlab/ simulink	Installed power generation in energy are waterturbine (synchronous generator) solarpower (electrical DC/AC- Converter) and windpower (asynchronous generator). Different load test rigs are available to change the load in the net. The aim is to simulate the isolated net with Matlab/ Simulink -Simpower – by changing the load. Comparison of simulated and experimental results.	Electrical, Automation, Mechanical and Environmental Engineering		X	Electrical engineering, programming language matlab/ simulink	X	X

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Gerd Thieleke Faculty of Mechanical Engineering	Commissioning of new electronic board of pressure measure-ment scanner system	To measure a lot of pressure position in a turbomachine there will be used pressure scanner systems. A mechanical pressure system operates with a new developed electronical board. The aim is to test the electronical board for the commissioning in a turbomachine.	Electrical, Automation, Mechanical and Environmental Engineering	X	X	Mechanical and Electrical engineering, programming language	X	X
Gerd Thieleke Faculty of Mechanical Engineering	Installation of laser Doppler anemometry in wind tunnel	Installation of laser Doppler anemometry in wind tunnel as a new technique to measure flow velocity in a wind tunnel. A Dantec Dynamics LDA System should be installed in the lab and measurements should be carried out in a wind tunnel.	Electrical, Automation, Mechanical and Environmental Engineering		X	fluid dynamic, programming language	X	X