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ANTENNA DESIGN FOR BROADCAST AND/OR 5G/LTE SERVICES IN INTELLIGENT ANTENNA MODULES AND TELECOMMUNICATION CONTROL UNITS

PROJECT DESCRIPTION

Design broadcast antennas with very good decoupling for FM and DAB services using metal printing technologies (FR4 or plastic substrates)
Design of LTE or 5G antennas for wireless telecommunication control units (telephony services) using different technologies (including 3D printing) in order to obtain a cost-effective design

The antenna design is based on computer simulation with dedicated software (ANSYS), prototype build and measurements using specific RF equipment (Network Analyzer, Spectrum Analyzer) in the lab and in anechoic chamber.

REQUIREMENTS

Faculty: Electronics and Telecommunication

Specific technical knowledge:

- › Radio Frequency theory, antenna theory;
- › Good understanding and experience with wireless designs including antennas;
- › Good understanding and experience with wireless measurements;
- › Some experience in antenna design and simulation would be a plus;
- › English - very good level;

PROJECT LENGTH

1st of February 2023 - July 23

H/DAY

4/6/8

DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Master or Bachelor

SYSTEMIC QUALITY MANAGEMENT

PROJECT DESCRIPTION

Develop Quality Management processes, methods and templates that facilitate a system approach for the most important quality production issues. The topics in focus are:

- › Verifications of changes in manufacturing
- › Zero damage components and mechanical damages
- › Clustering customer claims
- › Quality of Raw Materials

REQUIREMENTS

Faculty: all

Specific technical knowledge or skills required:

- › Skills: analytic thinking, organized, ability to think outside the box and ability to see the bigger picture.
- › Technical knowledge: Microsoft Office (especially Excel), basic knowledge from all engineering fields (especially Mechanics).

PROJECT LENGTH

1st of February 2023 - July 23

H/DAY

4/6/8

DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Master or Bachelor (preferable Bachelor)

MOUNTING AND ROTATING UNIT FOR AUTOMOTIVE RADAR MEASUREMENTS

PROJECT DESCRIPTION

In order to perform several measurements and test trials with the Continental automotive radars a complete specific setup is needed. The complete setup itself is composed of several hardware, mechanical and software components.

One of the most important hardware/mechanical components is the radar mounting and rotating setup unit (further called RU).

The RU must perform the following main tasks:

- › At least 2 axis planar movements (X and Y axis – azimuth and elevation)
- › Automated remote control of the movements;
- › Feedback of the positioning on the 2 axis;
- › Possibility for fine adjustment of the radar bracket;
- › HMI for the RU control

REQUIREMENTS

Faculty: Electronics, Electrical Engineering, Power electronics, Mechanics, Mechatronics, Automation & Computer Science, Information Technology and Informatics;

Specific technical knowledge or skills required:

- › Hardware: (power) electronics design, electric drives knowledge;
- › Software: #C programming skills; scripting languages know-how (#python, #bash); #cMake is a plus;
- › Mechanics: Knowledge of a CAD (modeling) software, Physical Material Properties, Tolerance Calculation, Understanding of physical phenomenon;

PROJECT LENGTH

1st of February 2023 - July 23

H/DAY

4/6

DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Bachelor

USB ISOLATOR FOR DESTRUCTIVE FEA TESTS

PROJECT DESCRIPTION

Create a PCB with an USB Isolator IC and a DC-DC convertor which can be used to isolate PC noise from the application board. Support from mentor to develop the PCB will be offered.

REQUIREMENTS

Faculty: Electronics, AC, Physics;

Specific technical knowledge or skills required:

- › Electronics;
- › DC-DC Converters;
- › Layout.

PROJECT LENGTH

1st of February 2023 - July 23

H/DAY

4/6/8

DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Bachelor

EVALUATION OF AZURE CLOUD FEATURES FOR ASP .NET WEB APPLICATIONS

PROJECT DESCRIPTION

The student must evaluate the possibility to use Azure cloud features on Continental's Internal A O IT BA Applications;

The following features will be evaluated:

- › Managed IIS and DB servers;
- › Hosting internal web applications;
- › Scalability;
- › Deployment and continuous integration;
- › Azure DevOps.

REQUIREMENTS

Faculty: Computere Science;

Specific technical knowledge or skills required:

- › Software programmimg skills usig ASP .NET, Database Operations.

PROJECT LENGTH

1st of Februrary 2023 - July 23

H/DAY

4/6/8

DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Bachelor

ANALOG MULTIPLEXER FOR ETHERNETRIO AUTOMATION SYSTEM

PROJECT DESCRIPTION

Develop analog multiplexer for ASIC testing automation system (schematic, layout, dimensioning)

Develop SW to control multiplexer

Integrate HW and SW in the automation system

You will be supported by a mentor for the entire development process of the designed tools and for the SW development.

REQUIREMENTS

Faculty: Electronics and Telecommunication;

Specific technical knowledge or skills required:

- › Electronics;
- › CAD tools;
- › LABView (optional).

PROJECT LENGTH

1st of February 2023 - July 23

H/DAY

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DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Bachelor

MACHINE LEARNING VISION BASED STATE OF THE ART IMPLEMENTATION ON DEMONSTRATOR

PROJECT DESCRIPTION

Implementation of state of the art vision based models on a demonstrator system to be able to run inference online in real time and augment the captured image with the detected features.

This means:

- › Integration of existing codebases
- › Adaptation of existing codebases
- › Performance enhancement for real time capability
- › Usage of external camera
- › Usage of external display
- › Encapsulation of code to make it exchangeable with different modules.

REQUIREMENTS

Faculty: Computere Science;

Specific technical knowledge or skills required:

- › Python;
- › Machine Learning;
- › PyTorch.

PROJECT LENGTH

1st of Februrary 2023 - July 23

H/DAY

4/6/8

DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Master or Bachelor

EVALUATION OF NETWORK TOPOLOGIES REGARDING THE CRITICALITY OF FAILURES OF THEIR ELEMENTS

PROJECT DESCRIPTION

Scope:

Develop a method for evaluation of Electric and Electronic network topologies regarding the criticality of failures of their elements:

- › Method shall be automated or partially automated
- › The critical elements shall be identified, and the overall criticality value shall be provided propose alternative designs with reduced criticality.

Phases:

1. Investigate the state of the art for evaluating the criticality of networks regarding failures
2. Propose and discuss methods for evaluating the criticality of networks regarding failures and for highlighting the critical elements

One initial idea is to represent the E/E network topology as a graph with nodes representing the ECUs and links representing the communication and power supply channels.

By (to be defined) graph-theoretic functions the criticality of the network may be determined.

This idea may be investigated in detail and/or other alternatives may be proposed.

REQUIREMENTS

Faculty: Politehnica University of Timisoara;

Specific technical knowledge or skills required:

- › Graph theory;
- › Modeling Tools.

PROJECT LENGTH

1st of February 2023 - July 23

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DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Master

COMPILER FOR A CONTINENTAL HARDWARE ACCELERATOR

PROJECT DESCRIPTION

Concurrent design, or codesign of hardware and software is extremely important for meeting a high performance per Watt goal, which in turn, is a major key to commercial competitiveness. Hardware/Software Codesign is used at Continental to design an application specific instruction set processors (ASIP); LLVM compiler was selected as the software part from the overall HW/SW codesign process

Objective of the project: As part of the HW/SW codesign, adjust the LLVM compiler to generate code for Continental's ASIP.

REQUIREMENTS

Faculty: Automation and Computers, Electronics and Telecommunication;

Specific technical knowledge or skills required:

- › C++ / Python;
- › Basic knowledge in Compilers.

PROJECT LENGTH

1st of February 2023 - July 23

H/DAY

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DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Master or Bachelor

ML COMPILER FOR INFERENCE ON A CONTINENTAL HARDWARE ACCELERATOR

PROJECT DESCRIPTION

Machine learning models are running on everything from cloud platforms to mobile phones. A Machine Learning compiler generates an optimized code for the target hardware, thus allowing the deployment of ML models in an environment where computing performance and power are scarce resources.

Objective of the project: Adjust Apache TVM ML compiler to generate code for a Continental Hardware Accelerator

REQUIREMENTS

Faculty: Automation and Computers, Electronics and Telecommunication;

Specific technical knowledge or skills required:

- › C++ / Python;
- › Basic knowledge in Compilers.

PROJECT LENGTH

1st of February 2023 - July 23

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DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Master or Bachelor

FEA BENCH

PROJECT DESCRIPTION

- › Design and implementation of FEA (Failure Effect Analysis) Setup;
- › Execute FEA Tests for different projects;
- › Maintenance of FEA Tool.

REQUIREMENTS

Faculty: Electronics, AC, Physics;

Specific technical knowledge or skills required:

- › Basic knowledge of electronics;
- › Basic knowledge of embedded systems.

PROJECT LENGTH

1st of February 2023 - July 23

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DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Bachelor or Master

μC BOARD FOR AUTOMATION MULTIPLEXOR

PROJECT DESCRIPTION

Automation board to be able to multiply the SPI-DAU outputs for COMBO sensors.

REQUIREMENTS

Faculty: Electronics

Specific technical knowledge or skills required:

- › Hardware
- › Software.

PROJECT LENGTH

1st of February 2023 - July 23

H/DAY

4/6/8

DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Bachelor or Master

UART DATA LOGGER FOR AUTOMOTIVE

PROJECT DESCRIPTION

Create a Data Logger which can acquire, store, and decode UART data.

REQUIREMENTS

Faculty: Electronics, AC;

Specific technical knowledge or skills required:

- › Electronics;
- › Arduino;
- › Microcontrollers.

PROJECT LENGTH

1st of February 2023 - July 23

H/DAY

4/6/8

DIPLOMA PROJECT TYPE (MASTER OR BACHELOR)

Bachelor

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