Continental
The Future in Motion

SUMMER PRACTICE PROJECTS 2021 TIMIȘOARA

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SELECTION PROCESS FOR SUMMER PRACTICE

1. APPLICATION:
Apply with your CV and a motivation letter, and mention the desired project.

2. PHONE INTERVIEWS WITH HR

3. TECHNICAL INTERVIEW SESSIONS
Technical interview and/or personality tests. You can choose one or more from the different technical knowledge required: ANSI C, microcontrollers, Java, C++, LAbView, Matlab/Simulink, Python, hardware, mechanics, 3D design, Unreal Engine or IT.

TIMELINE

1st of February 2021	The projects are posted on Continental website
1st of February – 28th of March 2021	CV selection
1st of March – 15th of April 2021	Phone interviews with HR
10th of May – 11th of June 2021	Technical interview sessions
1st of June – 15th of July 2021	Final results are communicated to the candidates
July – September 2021	Summer Practice stages


PROJECTS

Contents

SOFTWARE

HARDWARE

MECHANICS

TESTING

SYSTEM ENGINEERING

IT

INDUSTRIAL ENGINEERING


SOFTWARE

SW ALGORITHM DYNAMIC MODULE TEST

PROJECT DESCRIPTION

Dynamic Testing is defined as a software testing type, which checks the dynamic behavior of the code which is analyzed. The main aim of the Dynamic tests is to ensure that software works properly during and after the installation of the software ensuring a stable application without any major flaws.

The main purpose of the dynamic test is to ensure consistency to the software. Dynamic testing involves testing the software for the input values and output values are analyzed.

Dynamic Module/ Unit Test is an important step regarding ADAS development process. Dynamic Module/ Unit Test requires the execution of the software units. The software shall be executed in test environment: Cantata/ Courage (). Dynamic tests are performed with the knowledge of the module internals (written in C/ C++). This means that the branches and paths in functions and modules must be considered (code coverage).

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- C
- C++

NR. OF STUDENTS

20

COACH

Cezar Regep
Valentin Urițescu
Sergiu Deteșan
Viorel Pop-Hotăran
Mihai Zilahi

DEMO APPLICATION FOR AN EMBEDDED LINUX PLATFORM

PROJECT DESCRIPTION

Our group is responsible with creating a modern eLinux platform that offers various services for our application developers such as:
- Bluetooth
- Wi-fi
- GPS
- GSM/4G/5G
- Touchscreen
- USB Connection

We want to develop a demo application to showcase the various functionalities that our platform has to offer. During your summer practice, you will learn to use the APIs to use the technologies mentioned above and you will be part of the development effort for this brand new demo app.

TECHNICAL KNOWLEDGE

- Experience with an OOP language (C++ or Java)
- Some embedded experience would be a plus
- Some Linux experience would be a plus

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- C++
- Java.

NR. OF STUDENTS

3

COACH

Dragoș Mureșan

TOOL FOR GENERATING TEST SPECIFICATION AND REPORTS

PROJECT DESCRIPTION

Extend tool with additional functionalities:

- Implement check for coverage of SW Requirements and SD coverage
- Possibility to generate xml files
- Extend functionality for generating tests with other tags
- Create a guideline
- Implement check for duplicate test id's, missing tests in regression

Other bug fixes and improvements for existing functionalities.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- ANSI C
- Microcontrollers
- C++
- C#

NR. OF STUDENTS

2

COACH

George Ghilea

VARIANT MANAGEMENT TOOL AT SW LEVEL

PROJECT DESCRIPTION

I propose to build a tool - script tool, that is used for automatic Variant Management in ATIC172 projects:

Starting point:

1.System parameters are tuned via Pure Variant
2.An extract from DOORS of the system parameters will be provided to SW team

Main tool features:

1.Parameters should be checked via script for consistency
2.SW value should be computed at next step
3.SW values consistency check should be done
4.SW values will be searched automatically in the project and updated

This tool will bring a lot of added value for future application projects – that start from ATIC172 platform:

1.Reduces the risk of missing any calibration updates
2.Reduces the risk of wrong SW computation
3. Reduces the code size – since features will be enabled or not via this tool

TECHNICAL KNOWLEDGE

- VBA
- ANSI C

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- VBA
- Python
- ANSI C
- Microcontrollers

NR. OF STUDENTS

1

COACH

Lucia Crai

MODEL BASED DEVELOPMENT - MATLAB

PROJECT DESCRIPTION
Matlab model integration in Autosar project:
- Integrate the model
- Perform tests
- Perform analysis on the failed tests

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- ANSI C - advanced
- Matlab - basic

NR. OF STUDENTS
1

COACH
Dorin Ogner

CANOE COMMUNICATIONS CONFIGURATION

PROJECT DESCRIPTION
Develop CANoe configuration for BCM Integration purposes with the following goals:
- All signals can be changed by panel
- Integrate Diag Status information in a CANoe based status panel
- Maintain and adapt configuration according to immediate needs

TECHNICAL KNOWLEDGE
- ANSI C - advanced
- CAN knowledge - basic
- LIN knowledge - basic

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- ANSI C
- Microcontrollers

NR. OF STUDENTS
2

COACH
Dorin Ogner

DEVELOPMENT OF ROBUST TESTING ENVIRONMENT FOR INSTRUMENT CLUSTERS

PROJECT DESCRIPTION

In VNI CE, the testing of instrument clusters can be done via EOL (end of line) production test routines in development phase, prototyping phase and production phase.

The main advantage of testing via an EOL solution is the possibility to create reusable content for the users of the system.

The topic of the project is creating a test management system that is capable of autonomously running tests on multiple instrument clusters, interact with the devices, save test reports and create statistics.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- C
- Python

NR. OF STUDENTS

2

COACH

Ștefan Sanatescu

PRODUCTION TEST SOFTWARE - MICROCONTROLLER MANAGEMENT STACK

PROJECT DESCRIPTION

In VNI CE, the testing of instrument clusters can be done via EOL (end of line) production test routines in development phase, prototyping phase and production phase.

The main advantage of testing via an EOL solution is the possibility to create reusable content for the users of the system.

The topic of the project is developing a software component that manages the host microcontroller:
- Clocks and timing
- Controller variants and information
- Peripheral lists
- Customized peripheral information
- RAM and NvM
- Registers

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- C
- Advanced microcontrollers

NR. OF STUDENTS

1

COACH

Ștefan Sanatescu

AUTOMATED SWATT TESTING FOR MFST (MULTI FUNCTIONAL SMART DEVICE TERMINAL)

PROJECT DESCRIPTION

The target of the project is to develop test scripts in SWATT test environment for embedded systems, specific to application projects in MFST.

The following steps shall be followed:
- Learning about MFST product and wireless charging
- Learning script language
- Learning test techniques

Implementation of various automated tests for application SW components.

TECHNICAL KNOWLEDGE

- C

Optional: microcontrollers, SW testing techniques

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- ANSI C
- Microcontrollers

NR. OF STUDENTS

2

COACH

Calin Tamaș

AUTOMATED HIL ENVIRONMENT FOR ACCESS FUNCTION SW

PROJECT DESCRIPTION

The target of the project is to develop test scripts for HIL (Hardware In the Loop) test environment for embedded systems, specific to Passive Start and Entry functionality and Immobilizer functionality.

The following steps shall be followed:
- Learning the script language
- Learning car access software
- Learning test techniques

Implementation of various automated tests for car access generic SW components.

TECHNICAL KNOWLEDGE

- C

Optional: microcontrollers, SW testing techniques

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- ANSI C
- Microcontrollers

NR. OF STUDENTS

2

COACH

Simona Trif

USB IMAGE SENSOR CONTROL AND ACQUISITION MODULE (USB ISCAM)

PROJECT DESCRIPTION

The project aims to develop a solution for enabling the side by side evaluation of the image sensors available on the market.

The solution consists of a PCB for acquiring images from the image sensor and sends it to the PC via USB.

The project is split in two sections: HW and SW.
HW development will be consisting of selecting the electronic parts, schematic and layout design, manufacturing and testing of the final product.
SW is split in embedded coding of the video processor and GUI design.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- ANSI C
- Microcontrollers
- C++
- Drivers
- USB video class

NR. OF STUDENTS

1

COACH

Gabriel Avram

INTERFACE FOR LAZY SENSOR DATA EVALUATION IN ROAD MODEL FUSION

PROJECT DESCRIPTION

The Road Model Fusion has polynomial and polyline inputs (from camera, radar, vehicle dynamics component and navigation system). Each input is sampled into a polyline, which is then passed to different functions/objects of the Road Model component.

This proposal is to introduce a sensor interface (abstract class) with a series of methods that provide on demand needed aspects from the sensor data, delaying the polyline sampling until needed, in order to improve the overall runtime and memory usage.

Note: The scope of the Road Model Fusion is to take all available sensor input and provide a comprehensive model of the lanes, road boundaries and, more generally, road course in the surrounding environment.

TECHNICAL KNOWLEDGE

- C++ knowledge of abstract classes
- Basic algorithmic skills (e.g. read a complex algorithm, make minor changes)

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- C++
- Matlab

NR. OF STUDENTS

1

COACH

Flavius Gligor

LINE TO LINE ASSOCIATION METHODS FOR ROAD MODEL FUSION

PROJECT DESCRIPTION

Sensor data, as well as internal and output data, are represented as polylines in the Road Model Fusion. The scope of the project is to investigate (that is find and evaluate) association methods for polylines starting from a given literature.

Note: The scope of the Road Model Fusion is to take all available sensor input and provide a comprehensive model of the lanes, road boundaries and, more generally, road course in the surrounding environment. The fusion algorithm contains of
1. A prediction step, where the road model output from the previous step is predicted to the current execution time,
2. An association step, where measured input data is associated to existing features (e.g. a camera lane marker is associated to a lane boundary from the previous step)
3. An update step, where the output from step 1 is updated with the current sensor input according to step 2.

TECHNICAL KNOWLEDGE

- C++
- Matlab
- Basic algorithmic skills (e.g. read a complex algorithm, make minor changes)

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- C++
- Matlab

NR. OF STUDENTS

1

COACH

Flavius Gligor

CONTROL OVER THE INTERNET OF VOETSCH CLIMATE TEST CHAMBERS

PROJECT DESCRIPTION

The project consists of two parts:
-the first one is an analysis of the different implementation methods
-the second part is the practical implementation of control

The climate chamber has already an Ethernet communication protocol which allows control over a local network. A graphical control interface which allows remote control must be developed.
The student has the liberty to choose the programming environment. Several methods will be evaluated, and the best fit will be picked.

TECHNICAL KNOWLEDGE

- Good knowledge in networking (different internet protocols)
- Python/C programming language.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- ANSI C
- Microcontrollers
- IT

NR. OF STUDENTS

2

COACH

Beatrice Boldor

SW TEST FRAMEWORK

PROJECT DESCRIPTION
A framework which is an abstraction layer over different SW test execution tools (like Google Test).
The framework shall allow uniform launch of the tools (command line and GUI), collection of test logs in different data formats, conversion of test logs in a defined standard format, merge of multiple test logs, upload of data in different databases, report generation based on test logs and other data.

TECHNICAL KNOWLEDGE
- Very good knowledge of high-level programming languages (Java, C#, python)
- Knowledge of SW testing (e.g. ISTQB syllabus) and test automation (e.g. Jenkins)
- Graphical design abilities are a plus (nice looking reports, documents)

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- C#
- Java
- Python (a plus)

NR. OF STUDENTS
1

COACH
Vasile Paul Toth

A LINUX BASED AUTOMOTIVE HPC SHOW-CASE

PROJECT DESCRIPTION
A demo show-case based on two Automotive Linux platforms communicating with each other. The project aims to highlight how two different automotive SW stacks communicate with each other.

The project expected output is a PI-Car remotely driven by an AGL interface running on RPI platform through commands sent over SOME-IP protocol messages.

TECHNICAL KNOWLEDGE
- Good knowledge of high-level programming languages (C, C++, python)
- Familiar with Linux systems.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- ANSI C
- Microcontrollers
- C++
- IT
- HW
- Mechanics
- Python (would be a plus)

NR. OF STUDENTS
2

COACH
Gabriel Gîrban

AUTOMATED TESTING OF INTER-CONTROLLER COMMUNICATION IN AN EHORIZON BODY CONTROL UNIT PROJECT

PROJECT DESCRIPTION

Develop a set of automated test cases that cover the features impacted by the communication between the real-time RTOS controller and the Linux controller of an eHorizon body control unit.

Main tasks:
- Understand the architecture of the dual controller ECU and the features implemented on the real-time controller
- Get to know the Linux simulator application that will communicate over SPI with the real-time controller
- Adapt the test environment (C#) to communicate with the Linux simulator application in order to send commands for the real-time controller
- Develop new test cases in the test environment and update the Simulink test application (model based development)
- Oversee the CAN communication between the ECU and the test environment

TECHNICAL KNOWLEDGE

- ANSI C,
- Embedded systems / Microcontrollers

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- ANSI C
- Microcontrollers
- C#

NR. OF STUDENTS

2

COACH

Cristian Păunescu

INSTRUMENT CLUSTER BLUETOOTH CONNECTIVITY

PROJECT DESCRIPTION

In touch with new trends for instrument clusters connectivity requirements, develop Android / IOS based mobile application and embedded software that allows BlueTooth communication between mobile and vehicle instrument cluster.

Main tasks:
- Get to know the Bluetooth internal communication protocol and what a device needs to implement to allow others to connect via Bluetooth
- Develop mobile application that would send and receive data via Bluetooth
- Understand how a RealTime operating system works and develop embedded software modules in ANSI C to communicate with the smartphone
- Exchange data between devices to support on instrument cluster side features like: display notifications (e.g social media, missed calls), accept / decline calls, activate / deactivate smartphone voice control, multimedia handling (e.g music volume and track control), display turn-by-turn navigation; mobile app can support reading of vehicle information (e.g vehicle speed, traveled distance).

TECHNICAL KNOWLEDGE

- ANSI C
- Embedded systems / Microcontrollers
- Mobile App development

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- ANSI C
- Microcontrollers

NR. OF STUDENTS

2

COACH

Cristian Păunescu

SEQUENCER FUNCTIONAL SAFE CHECKERS

PROJECT DESCRIPTION
This summertime projects are parsers that convert data from a SQL database into C# objects and checks if there are differences between the parsed objects and other memory objects.
This is required to check if specific duplicate/copy/import commands work correctly.
The development will also include automated testing and review procedures according to Continental standards.

TECHNICAL KNOWLEDGE
- OOP design patterns (Visitor, Template, Strategy, Singleton)
- General knowledge about SQL queries
- C#

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- C#
- Design patterns
- OOP
- SQL
- Junit/Nunit

NR. OF STUDENTS
1

COACH
Alexandru-Sebastian Sârbu

INDUSTRY 4.0. INTEGRATION OF PLANT FACILITY EQUIPMENT IN PLANT BIG DATA

PROJECT DESCRIPTION
Targets.
1. Collect information from different equipment (temperature, pressure, electrical consumption, gas consumption, water consumption, HVAC equipment) and alarm system information and store in database. Information will be collected mainly from WEB equipment monitor/control interface
2. Collect all the alarm information from equipment/sensors and deploy the alarm information to the mobile devices (SMS and email)
3. Build the database user interface for equipment parameters and alarm information

Used software:
a) Node-RED for interface with equipment, data handling and store results
b) MySQL
c) Programing: JavaScript, Python, C++, C#..

TECHNICAL KNOWLEDGE
- Experience in WEB programing

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- C++
- C#
- Java
- IT
- hardware and mechanics

NR. OF STUDENTS
2

COACH
Petru Demian

AGILE SCENARIO-BASED LEARNING

PROJECT DESCRIPTION

Project category:
Apply gamification concepts in online learning item creation
Project Topic:
Agile methodologies
Project name:
Agile scenario based learning
Project description:
Create a gamified online training in which agile concepts , rituals or artefacts are taught by using gamified elements and scenario-based deployment.
Present elements: team roles are defined, scenery, dialogue, different learning path depinde on the learner's choice.
Gamification elements: rewards, game challenges and quizzes.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- Camtasia
- Captivate (is a plus)
- Photoshop (is a plus)
- Animation creation
- PowerPoint
-Java Script could be useful (Advanced Action from Captivate)

NR. OF STUDENTS

2

COACH

Krisztina Fițu

3D OBJECT DETECTION AND TRACKING USING MACHINE LEARNING

PROJECT DESCRIPTION

Modify, merge, implement neural networks to detect traffic participants (like pedestrians, cars, trucks, bikes) necessary for autonomous driving

TECHNICAL KNOWLEDGE

- Python
- Machine learning

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- Python
- C

NR. OF STUDENTS

2

COACH

Cristian Băcican


HARDWARE

ARBITRARY WAVEFORM GENERATOR

PROJECT DESCRIPTION
Develop HW and SW system capable to import arbitrary wave form parameters via PC and can be used to supply stand-alone the connected automotive sensors in order to test robustness of sensors against voltage drops. (Demo sample already exists, student must understand and upgrade the existing system in order to optimize it).

TECHNICAL KNOWLEDGE
- HW Digital/Analog
- Labview
- Excel
- Measurement Equipment's (Oscilloscope, Voltage Amplifier)

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Hardware
- Microcontrollers
- Labview
- PCB design - Layout

NR. OF STUDENTS
2

COACH
Radu Dumitru
Lucian Avramescu

APPLIED PULSED INFRARED LASER DIODES AND OPTICAL COMPONENTS USAGE INSIDE ADVANCED AUTOMOTIVE INDUSTRY (LIDAR TECHNOLOGY)

PROJECT DESCRIPTION
Student(s) will learn about different optical components and ADAS sensors, principles and testing methods, as well about output data interpretation.

They will be introduced in laser safety concepts/ laser classes.

ADAS Lidar sensors and their features, functions and benefits will be presented, i.e. EBA (Emergency Break Assist), ABD (Blockage Detection), etc.
Attendees will be taught on optical components measurements such as Laser diodes, Photodiodes, Fresnel TX-lens, RX-lens and on optical characterization of the materials for windshield, light guides, etc.
During summer practice participants will be trained on theoretical principles i.e. ToF (Time of Flight). Constant hands-on sessions it be delivered regarding testing equipment i.e. LLA (TXlens Laboratory Lens Adjust), EoL (Lidar End of Line), Integration Sphere (optical power measurement), in correlation with various test methods

TECHNICAL KNOWLEDGE
- Laser radiation
- Optical lenses
- Basic geometrical optics

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Basic knowledge of programming in MatLab software

NR. OF STUDENTS
2

COACH
Adrian Părău

ASICS SMPS

PROJECT DESCRIPTION
Tools: LeCroy oscilloscope, Test template, IMS

Daily tasks:
- Understanding of the requirements and the description of the switching mode power supply modules
- Understanding of the ASICs requirements
- Support in the testing setups
- Support in ASICs power supply testing

After an initial training phase which will familiarize you with our products, tools, processes and organization, a mentor will support you in taking over of the responsibility for the power supply testing, mainly SMPS.

TECHNICAL KNOWLEDGE
- Electronics (3rd or 4th year of study)

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Analog and Digital electronics
- Microcontrollers
- Labview

NR. OF STUDENTS
1

COACH
Sorin Androne

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

TECHNICAL KNOWLEDGE
- Hardware design
- Electric drives knowledge
- Basic programming
- Mechanics

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Microcontroller
- ANSI C
- Hardware and basic mechanics

NR. OF STUDENTS
1

COACH
Adrian Cotuna

FEA GENERIC

PROJECT DESCRIPTION
Tools: LeCroy oscilloscope, Test template, IMS, FEA Automated tool

The task would be to build up and stand for FEA automatic test . The idea is to gather the knowledge of existing testbenches and optimize the existing program for testing.
The task is also to be checked the existing manual tests witch might be automatic.
The SW used is Excel based, plus other specific diagnose programs.

The knowledge acquired would be the usage of Microsoft Office especially Excel.

TECHNICAL KNOWLEDGE
- Electronics

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Hardware

NR. OF STUDENTS
1

COACH
Vlăduț Mangu

USB IMAGE SENSOR CONTROL AND ACQUISITION MODULE (USB ISCAM)

PROJECT DESCRIPTION
The project aims to develop a solution for enabling the side by side evaluation of the image sensors available on the market.

The solution consists of a PCB for acquiring images from the image sensor and sends it to the PC via USB.

The project is split in two sections: HW and SW.
HW development will be consisting of selecting the electronic parts, schematic and layout design, manufacturing and testing of the final product.
SW is split in embedded coding of the video processor and GUI design.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Hardware
- Microcontrollers
- Power converters
- Electronic packaging
- High speed design

NR. OF STUDENTS
2

COACH
Gabriel Avram

TEMPERATURE CONTROLLED HEATER FOR IMAGE SENSOR CHARACTERIZATION

PROJECT DESCRIPTION

This project involves going trough the all the major steps to develop a functional piece of equipment: analyzing requirements, circuit development, circuit simulation, layout development, assembly and testing.

The project its self involves designing an amplifier to be used for measuring very low level signals(<1mV). The amplifier needs to have a high gain factor but also a very low noise figure. The design will involve a balance between these two main factors as well as integrating high order filters to clearly limit its bandwidth.

TECHNICAL KNOWLEDGE

- MATLAB programming
- UI design
- Closed-loop control theory
- Measurement equipment electrical design
- Thermal measurements
- Semiconductor characterization

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- Matlab
- Hardware and mechanics

NR. OF STUDENTS

1

COACH

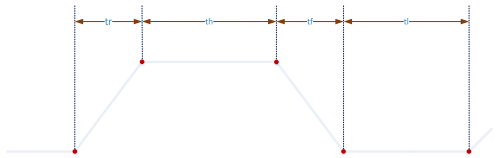
Cătălin Negrea

ADVANCE DIGITAL LOAD DUMP DEVICE

PROJECT DESCRIPTION

The device should be capable to deliver current pulses with parameters according to the following picture:

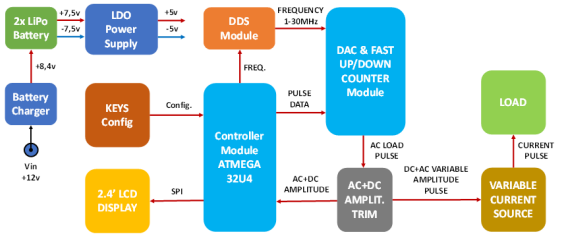
Dinamic_load Pulse



tr = 3us to 2ms
tf = 3us to 2ms
th = 100us to 2s
tl = 100us to 2s

To fulfill the required parameters, the initial proposed project block diagram is presented in the bellow picture:

Load Dump Device, Block Diagram



TECHNICAL KNOWLEDGE

- Discrete active Semiconductors and passive
- Power supply ICs, ADC, DAC ICs, ATMEL/Microchip Controllers
- Communication Buses.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- Hardware

NR. OF STUDENTS

2

COACH

Paul Ududec

RF MEASUREMENT AUTOMATION AND SET-UP FOR WIRELESS PRODUCT (OVER THE AIR, ANECHOIC CHAMBER MEASUREMENTS)

PROJECT DESCRIPTION
We are building complex setups for specific antenna measurements in advanced wireless modules, including Over-the-air type measurements. This require a certain degree of automation, SW control, RF setup understanding and build-up etc.

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

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Matlab, hardware
- Ansys HFSS (if possible)
- RF measurement equipment (Vector Network Analyzer, Spectrum Analyzer, Signal Generator)

NR. OF STUDENTS
1

COACH
Răzvan Bejinaru

ANTENNA DESIGN FOR BROADCAST SERVICES IN INTELLIGENT ANTENNA MODULES

PROJECT DESCRIPTION
Design broadcast antennas with very good decoupling for FM and DAB services using metal printing technologies (FR4 or plastic substrates)

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

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Matlab, hardware
- Ansys HFSS (if possible)
- RF measurement equipment (Vector Network Analyzer, Spectrum Analyzer, Signal Generator)

NR. OF STUDENTS
1

COACH
Răzvan Bejinaru

ANTENNA DESIGN FOR LTE ANTENNAS IN TELECOMMUNICATION CONTROL UNITS

PROJECT DESCRIPTION

Design of LTE antennas for wireless telecommunication control units (telephony services) using 3D printing technology in order to obtain a cost-effective design

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

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- Matlab, hardware
- Ansys HFSS (if possible)
- RF measurement equipment (Vector Network Analyzer, Spectrum Analyzer, Signal Generator)

NR. OF STUDENTS

1

COACH

Răzvan Bejinaru


MECHANICS

FIXING OF LARGE DISPLAY WITH ADHESIVE TAPES

PROJECT DESCRIPTION
The scope of this project is to develop a concept, to design and produce the necessary parts and equipment, for testing a large display fixed with the help of adhesive tapes. The student will have the opportunity to learn the clusters basics, to make CAD design, to get in contact and to see how the sample shop/machines are working.

As well the student need to get in contact with adhesive tape supplier and together to choose the best tape for the application.
At the end the student can take part at the acquirement testing, and result analysis.

TECHNICAL KNOWLEDGE
- The student should have finished second year of Technical University

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Catia or Creo

NR. OF STUDENTS
1

COACH
Florin Roman

GLUING ROBOTS PROGRAMMING DESIGN GLUING AND ASSEMBLY JIGS IN SAMPLE PRODUCTION

PROJECT DESCRIPTION
Programming gluing robots using the equipment interface. Executing the gluing process on projects.
Design jigs for different applications/ projects in Sample Production using a CAD software such as Creo, Catia or Solid works.

TECHNICAL KNOWLEDGE
- CNC basic knowledge

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Mechanics

NR. OF STUDENTS
2

COACH
Remus Șovăgău

DESIGN PARTS OF A HUD

PROJECT DESCRIPTION
Design in Creo some of the following parts as 3D model +2D drawing:
- Side wall
- Motor holder
- Lager
- Heat sink / Heat sink assembly
- Screen
- Mirror (aspherical / folded) / mirror assembly

If the Creo knowledge is not available, 1 week is needed for the basic training Creo 4.

TECHNICAL KNOWLEDGE
- General technical knowledge / Creo

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Mechanics

NR. OF STUDENTS
2

COACH
Adrian Versigan

UNIVERSAL RIMS MOCKUP. FIXTURE THAT SIMULATE OEM RIMS

PROJECT DESCRIPTION
In order to save time/money and also space, our intention is to build mockup rims based on customer details. Then we can simulate sensor mounting, collision and any trial that usually we done with specific rim.

TECHNICAL KNOWLEDGE
- CAD – CATIA v5

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Mechanics

NR. OF STUDENTS
1

COACH
Mihai Barbalata
Ilie Atanasoe

IMPROVEMENT STUDY IN MECHANICAL DESIGN OF AIRBAG CONTROL UNITS

PROJECT DESCRIPTION
Find new design solutions oriented for cost reduction and ease of assembly.
Stages:
- Brainstorming (new ideas), concepts
- Theoretical check (simulations)
- Selection of concept
- Design refinement
- Prototype build (rapid prototyping)
- Tests
- Conclusion and Presentation

TECHNICAL KNOWLEDGE
- Rules for plastic parts design and sheet metal design, material science, manufacturing technology basics (thermoplastics injection, stamping), 3D printing
- CAD SW: Creo

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Mechanics

NR. OF STUDENTS
1

COACH
Gabriel Goron

PLASTIC INJECTION MOLDING TECHNOLOGIES

PROJECT DESCRIPTION
Learn about plastic injection molding technologies and mold flow simulations for automotive parts.

TECHNICAL KNOWLEDGE
- Basic injection technologies

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Mechanics

NR. OF STUDENTS
1

COACH
Remus Șovăgău

HEAD-UP (HUD) OPTICAL MEASUREMENT SPECIALIST

PROJECT DESCRIPTION
Basics in HUD optical measurements:
- HUD structure and functionality
- HUD optical performance
- HUD optical measurements
- Tools: use camera measurement systems
- practice in optical Laboratory

TECHNICAL KNOWLEDGE
- Basic technical knowhow

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Geometrical Optics and Photometry
Optional: programming, Matlab, hardware and mechanics;

NR. OF STUDENTS
1

COACH
Vasile Sărăcuț

HEAD-UP (HUD) OPTIC DESIGNER SPECIALIST

PROJECT DESCRIPTION
Basics in HUD optics:
- HUD structure and functionality
- HUD optical performance
- HUD optical design - basic
- Tools: use Speos or Zemax as optical simulation software;

TECHNICAL KNOWLEDGE
- Basic technical knowhow

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Geometrical Optics and Photometry
Optional: programming, Matlab, hardware and mechanics;

NR. OF STUDENTS
1

COACH
Vasile Sărăcuț

USB IMAGE SENSOR CONTROL UNIT (USB ISCAM)

PROJECT DESCRIPTION
The project aim is to develop mold injected parts for a USB Control unit in collaboration with HW colleagues.

The newly created parts must ensure the necessary protection of the electrical components and provide a good heat dissipation solution.

TECHNICAL KNOWLEDGE
- Mechatronics or Fine mechanics student with average knowledge of CAD programs (Creo, CATIA)
- Average knowledge of tolerance calculations and design of plastic injected parts is required
- Good knowledge of English is mandatory.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Mechanics
- Hardware

NR. OF STUDENTS
1

COACH
Octavian Lescu

TESTING OF KEYFOB'S MECHANICAL COMPONENTS/ SUB-ASSEMBLIES

PROJECT DESCRIPTION
We are testing the mechanical/optical characteristics of several car keys. The main activities:
- Mechanical engineering tests
- Mechanical fine-tuning loops
- Mechanical fixtures design
- Support for quality labs colleagues.

TECHNICAL KNOWLEDGE
- Catia and/or Creo
- Excel
- 3D printing (optional)

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Mechanics

NR. OF STUDENTS
1

COACH
Milan Talpeș


TESTING

MANUFACTURING LINE DIGITAL TWIN

PROJECT DESCRIPTION

The Digital Twin is a virtual clone of a real manufacturing line for one of our HMI products that permits real-time production data tracking (like Cycle Time, Overall Equipment Efficiency, First Pass Yield, Work In Progress, line output and Scrap) in paralel with the virtual visualization of the line either on a regular computer or using a Virtual Reality setup. This allows for virtual gemba walks, Jishuken workshops, line optimizations, standard work changes and line monitoring without interfering with the production process.

The summer practice student will work with CAD data processing applications (Virtual Components) to convert the equipment and line specifications into the Digital Twin and link it with existing sensors and tracking systems from the line.

TECHNICAL KNOWLEDGE

- Basic programming skills
- CAD data handling

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- C++
- C#
- IT
- Hardware and mechanics

NR. OF STUDENTS

1

COACH

Andrei Sandu

AUTOMATIC TESTING OF AN AIRBAG CONTROL UNIT

PROJECT DESCRIPTION

As a student in Passive Safety Test Group you will learn about Airbag Control Unit, get in contact with the latest test equipment on the market, use SW functions to control complex/Real Time measuring equipment.

Inside our team we have several exciting projects open for you:
- develop HW & SW tools that enable automatic test activities for the Airbag Control Unit.
- develop automatic tests using C# and the preexisting CFramework.
- maintain & develop Excel macros for test result evaluation

TECHNICAL KNOWLEDGE

- Good programming skills
- Basic electronics & uController know-how

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- ANSI C
- C#
- hardware

NR. OF STUDENTS

2

COACH

Antonie Murgulescu

RADAR SENSOR MODEL INPUT DATA GENERATION/ CONVERSION USING MATLAB/SIMULINK

PROJECT DESCRIPTION

According to the latest trends in automotive radar technology the car manufacturers require a model of the Radar Sensor they would like to buy. Therefore, the design and built of such models became a must in the last years.
The data exchange between the simulation environment and the model happens via a standard called Open Simulation Interface (OSI)
In order to simulate complex scenarios (e.g. busy intersection with 15 cars, pedestrians, guard rails etc.) the scenario needs to be generated. The manual generation of such a scenario can take a long time and is predisposed to human errors.
To overcome this limitation an automated conversion system could be implemented using C/C++ and/or Simulink. The input to this converter would be the recording of a real test-driving and the output would be a data structure according to OSI.
Therefore, the project consists of creating, from scratch, such a converter application.
During this project the student will have the opportunity to learn the basics of:
- Automotive radar operation
- Test drive recording system
- Analysis procedures of recorded data
- Open Simulation Interface
- Simulink S Functions (this ensures interoperability with C/C++)
- Radar phenomenological modeling

TECHNICAL KNOWLEDGE

- Basic (beginner) knowledge in Simulink

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- ANSI C
- C++
- Matlab
- Simulink

NR. OF STUDENTS

1

COACH

Zoltan Szabo

AUTOMATED TEST BOXES VALIDATION

PROJECT DESCRIPTION

A complete solution for automatically testing the test boxes available in our testing group shall be implemented:
- First, an analysis will be made regarding the functionalities of each test box.
- A harness will be designed for each test box at the schematic level. The harness will be built by our internal workshop.
- A SW tool containing specific sequences for each type of test box will be developed (LabVIEW or C#)
- The sequence should validate the functionalities/cards of the test box using different testing methods (ex: boundary values, equivalence classes).
- Solution is tested and is deployed on pilot project.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- Labview / C#
- HW

NR. OF STUDENTS

2

COACH

Andrei Tincu

ROLL OUT TEST AUTOMATION FRAMEWORK (TAF) IN NEW PROJECTS

PROJECT DESCRIPTION

TAF is a framework that integrates most of the devices and tools used by system test team; this framework integrates all testing activities starting from test case design till test execution and reporting.

Tasks to be performed:
- test cases (test scenario) have to be written in a specific language (called data definition);
- test scripts are generated based on the test cases (exported from configuration management tool) in an IDE (python IDE) and need to be integrated;
- test results are imported into the configuration management tool;
- Report are generated automatically based on the test results;

Test scripts are written in OOP language format, every Component is implemented as a Python class (in a module can be one class or multiple classes).

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- Python
- CANoe (opt.)
- Hardware
- Testing techniques

NR. OF STUDENTS

1

COACH

Remus Jurj

DEEP DIVE TESTING FOR ADAS MEASUREMENT TECHNOLOGY HW SOLUTION (MI5)

PROJECT DESCRIPTION

MI5 stands at the very heart of the chosen ADAS Measurement Technology solution. Together with MTS (as software solution running on the MI5) – it is the answer provided by ADAS Virtual Systems to the increasing amount of requests for providing stable, robust, scalable and professional test and validation solutions for all the Continental ADAS-developed sensors that are paving the way to Automated Driving.

Cost effective, quality and reliability proven by field operation and lab testing – we aim to have a detailed understanding of the current performance capabilities of the MI5, especially in the context of witnessing increasingly higher needs coming from different ADAS projects and area, coupled with higher diversity for available measurement solutions available in the 2021 worldwide market.

We ae looking for dedicated people wiling to take part of a team tasked to define, execute and conclude on tests that will show the detailed capabilities of the MI5 – as both HW and OS.

TECHNICAL KNOWLEDGE

- Windows/Linux OS knowledge
- PC HW knowledge
- HW testing/tooling,

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- Hardware (PC)
- IT

-C++/C#/Java

NR. OF STUDENTS

2

COACH

Edward Draica

MTS AUTOMATIC TEST SOLUTIONS

PROJECT DESCRIPTION

MTS (**M**easurement, **T**est and **S**imulation) is the Continental ADAS high performance, holistic, scalable and cost-effective solution for addressing the test and validation needs existing around every single Continental ADAS sensor. This system consists of a robust Windows-based data acquisition, storage, replay and simulation SW solution running on highly customized industrial PC platforms.

We are looking for dedicated colleagues that are highly motivated to find the most appropriate test automation solution that will help increase the overall quality in MTS, while decreasing the overall testing time and need resources.

TECHNICAL KNOWLEDGE

- SW development, test and validation

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- C++/C#/Python/scripting

NR. OF STUDENTS

2

COACH

Ana-Maria Andrașiu


SYSTEM ENGINEERING

PRODUCT INTEGRATION TEST SPECIFICATION

PROJECT DESCRIPTION

The Product Integrator role is part of the System Engineer team and it is in close contact with the technical aspects of product development. Among the responsibilities of a PI role, we mention: Technical coordination of the product integration, Creation of the Production Test Specification Unit part, Creation of the Product Integration Test Specification, Interface between development team and Sample Shop, Ensure that the discipline components are correctly released and that correct data versions are transferred into SAP-PDM.

The project which we are proposing is to create or adapt the Product Integration Test Specification for a new project or a new Model Year. Know-how about this procedure is available within our team and the mentor will guide and support the internship in this task. The project is also a good candidate for a university graduation project. The author has the opportunity to cover both theoretical and practical aspects of the project: create the documentation with respect to the company's process and test conform with the created specification on real environment. The project also stands for a good on-the-job training regarding many aspects of a complete system development, with interaction with al involved disciplines: mechanical design, electrical design, SW design, Display Technology, Sample Production, Testing, Quality.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- IT

- Hardware and mechanics

NR. OF STUDENTS

1

COACH

Florin Spânu

S3 REQUIREMENTS MANAGEMENT

PROJECT DESCRIPTION

S3 is the generic name for a group of customers which includes VW, Skoda, Audi, BMW. The Requirements management domain involves handling the customer technical requirements: define a structure in Doors, import documents, set-up attributes, set-up responsibles, generate acceptance and traceability reports, consolidation of updated requirements.

The Internship will receive support from an experienced mentor, specific trainings for tools and processes and will benefit from know-how sharing from the team colleagues.

At the end of the probation period, the intership will have extensive knowledge about Doors, Trace-it, V-cycle, automotive, system development.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED

- IT

- Hardware and mechanics

NR. OF STUDENTS

1

COACH

Maria Nicolaescu

PRODUCT INTEGRATOR BASICS

PROJECT DESCRIPTION
Basic knowhow for a product integrator:
- HUD – structure and functionality
- Basic knowledge for HUD: software, hardware, mechanics, optics, system
- HUD assembly and verification
- Tools: Canoe11 and UTAS 5

TECHNICAL KNOWLEDGE
- Basic understanding of Software
- Hardware and Mechanics

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- IT
- Hardware and mechanics
- Microcontreolers

NR. OF STUDENTS
2

COACH
Delia Toader

AUTOFILL APP FOR ENGINEERING DOCUMENTS

PROJECT DESCRIPTION
Case 1. When starting a new project, a lot of official document shall be fill out with repetitive information regarding project name + team members + discipline + responsible + revision + and so on. Would be more efficient if all repetitive information would be centralized into Excel file and a new student's application can get information from Excel and write automatically into correct word document and correct place within it.

Case 2. Also, there is a aggregator document such is Safety Case (responsible: Project Engineer for Safety) where almost all project documents shall be inside with title, SharePoint links, its review title and link, date of latest version, type of version (draft or released), and so on. The new student's application should gather all information from SharePoint project directory(folders) structure and gather all information needed, then write it automatically into Safety Case at right place.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Python or C# or any other language useful for manipulating Microsoft Office documents and their inside information (e.g. see link https://stackabuse.com/reading-and-writing-ms-word-files-in-python-via-python-docx-module/)

NR. OF STUDENTS
1

COACH
Nic Baltarete

TRANSPORT SERVICES OPERATIONAL EXCELLENCE

PROJECT DESCRIPTION
- Monitor network equipment and help investigate false positive alarms
- Check automation processes and create documentation accordingly
- Develop small scripts
- Create and document dashboards
- New RunIP Packages verification and rollout

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- IT
- C++
- C#
- Java

NR. OF STUDENTS
2

COACH
Marius Copce

BUSINESS PARTNER ACCESS OPERATIONAL ACTIVITIES

PROJECT DESCRIPTION
- Cleanup for Automatisation Project
- Request validations and change request creation for System Operation.
- Firewall implementations for AccessIn, AccessOut.
- Bug fix for firewall rules.
- User support for different BPA products (AccessIN, Fastviewer, MoveIT, AccessOut, Opendxm, PartnerRoom, T-Systems, etc.)
- New tool version testing.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- IP address management
- Network ports
- firewalls knowledge a plus

NR. OF STUDENTS
1

COACH
Monica Herbai

INDUSTRIAL ENGINEERING

CAPACITY PLANNING TOOL PCP

PROJECT DESCRIPTION
Using PCP tool is required to generate weekly and monthly views for all production lines in regards of loadings and capacity constraints.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Good MS Office knowledge and skills. (Excel, Power Point)
- Well organized person, attentive to details, rigorous

NR. OF STUDENTS
1

COACH
Claudiu Coicheci

UPDATE SPARE PARTS CATALOG PICTURE

PROJECT DESCRIPTION
Take picture for missing spare parts and upload them in the spare parts catalog, together with other identification information.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Microsoft office package

NR. OF STUDENTS
1

COACH
Gheorghe Butaru

TOOLSHOP

PROJECT DESCRIPTION
Mounting subassemblies build in toolshop.

TECHNICAL KNOWLEDGE
- Technical drawing
- Hardware and mechanics

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Hardware and mechanics

NR. OF STUDENTS
1

COACH
Arthur Heczel

ROBOTS PROGRAMMING AND VIRTUAL MODELS FOR UNREAL ENGINE LOCAL LIBRARY

PROJECT DESCRIPTION
Program robots based on the requirements from engineer.
Create and manage virtual models such as Equipment, Robots or custom sketch that will be used in building the virtual environment of production lines. All these elements are the basis of the new projects for Virtual Reality created in our Plant Timisoara.

SPECIFIC TECHNICAL KNOWLEDGE REQUIRED
- Knowledge of 3D design and simulation tools such as Visual Components, Unreal Engine, CAD modeling
- Python programming
- Solid Works

NR. OF STUDENTS
1

COACH
David Fira-Mladinescu

Continental Automotive Romania SRL
Strada Siemens nr. 1, 300704 Timişoara, Timiş
T.: 004-0256-251-100
F.: 004-0256-253-071

www.romania.careers-continental.com

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