



SUMMER PRACTICE PROJECTS 2022 IASI

LET
YOUR
IDEAS
SHAPE
THE
FUTURE

PROCESUL DE SELECȚIE PENTRU PRACTICA DE VARĂ

1. APLICARE:

Completează formularul de aplicare. Te rugăm să menționezi în formularul de aplicare primele 3 proiecte (titlurile din broșură) la care ai vrea să contribui pe perioada practicii de vară.

2. INTERVIU TEHNIC

În funcție de proiectele alese, vei fi invitat la o discuție tehnică, bazată pe ariile menționate în broșură, la proiectul respectiv/ proiectele respective.

3. INTERVIU HR

În urma interviului tehnic, în funcție de feedback-ul primit, vei putea fi invitat la o discuție de cunoaștere.

CALENDAR

CÂND?	CE?
28 februarie 2022	Postarea și promovarea proiectelor de practică
28 februarie - 20 martie 2022	Studentii care vor finaliza cel puțin anul II de studii în anul 2022 pot aplica pentru proiectele preferate.
21 martie - 25 martie 2022	Preselecția aplicanților și alocarea acestora pe proiecte *Locurile sunt limitate. În cazul în care numărul aplicanților va depăși numărul locurilor alocate, se va realiza o preselecție pe baza mediei anului de studiu precedent.
28 martie - 13 mai 2022	Desfășurarea procesului de recrutare: -Interviuri tehnice -Interviuri HR -Rezultate finale
iulie - septembrie 2022	Desfășurarea programului Summer Practice

A nighttime cityscape featuring a prominent skyscraper with a distinctive spherical top on the left. The scene is filled with light trails from traffic and illuminated buildings. A large, bold, orange letter 'P' is superimposed over the center, with the word 'PROJECTS' written in black below it.

P
PROJECTS

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AM

CONTILIB

PROJECT DESCRIPTION

Web based application to manage books of our internatal Conti library (add books, manage landings, check availability, analitics, etc.)

MAIN RESPONSIBILITIES

- building a books database
- building a frontend of web app and also mobile
- integrate barcode and badge scanners into app
- building the back end based on workflow

KNOWLEDGE MUST HAVE

- database + frontend
- Excel
- Power Bi

KNOWLEDGE NICE TO HAVE

- mobile
- Sharepoint
- Grafic User Interface

YOUR WORKING CONTRACT COULD BE:

6 h per day

RUBIK'S CUBE SOLVER

PROJECT DESCRIPTION

RGB led rubik cube showing step by step how to solve the real rubik cube. Additional futures could be implemented: video camera interface, mobile / pc connectivity, etc

MAIN RESPONSIBILITIES

- develop hardware schematic and PCB
- develop the software algorithm (e.g. in Arduino IDE, rasperry pi)
- create and test the used interfaces between the real rubik and the virtual one created with RGB leds.

KNOWLEDGE MUST HAVE

- hardware design
- digital electronics
- embedded C

KNOWLEDGE NICE TO HAVE

- basic SW development in Arduino IDE or similar
- digital communications

YOUR WORKING CONTRACT COULD BE:

6h per day



PORTABLE EMERGENCY SIGNALING

PROJECT DESCRIPTION

Prototyping a quick aid set of independent, portable and autonomous lamps that can be attached to the back of a vehicle, trailer or caravan which has a failing taillight system.

MAIN RESPONSIBILITIES

- Tinkering an idea
- Drawing the schematic and the layout
- Getting familiar with worst case analysis and performing simulations and tests
- Learning documenting strategies

KNOWLEDGE MUST HAVE

- hardware design
- digital electronics
- embedded C

KNOWLEDGE NICE TO HAVE

Previous experience with amateur, personal, technical projects is considered as a plus.

YOUR WORKING CONTRACT COULD BE:

4h per day

MOS-FET OPTIMAL DRIVING

PROJECT DESCRIPTION

The project will be based on a boost convertor (not important the complet schematic of the PWM generator) BUT will be necessary to obtain the maximum energetic randament with minimum EMC (radiation and conduction).

MAIN RESPONSIBILITIES

The main responsibility for the student is to obtain a better undestading of how the MOS-FET tranzistor work.

KNOWLEDGE MUST HAVE

- hardware design
- digital electronics

KNOWLEDGE NICE TO HAVE

- programing

YOUR WORKING CONTRACT COULD BE:

4h per day



EQUIPMENT BOOKING APP

PROJECT DESCRIPTION

Design and develop an application to facilitate equipment booking, check equipment status etc.

MAIN RESPONSIBILITIES

- Design the application
- Learn a new programming language if necessary
- Develop the application
- Integrate the app to be accessible to all team members
- Work on add-ons (for example, to control a remote test bench - flashing software by using different scripts)
- Have fun and a memorable experience :)

KNOWLEDGE MUST HAVE

- General programming knowledge

KNOWLEDGE NICE TO HAVE

- Experience in working with Python programming language

YOUR WORKING CONTRACT COULD BE:

4h per day

OBJECT DETECTION USING LIDAR DATA

PROJECT DESCRIPTION

Develop an object detection system using LiDAR data using Python and established ML/Data Processing algorithms such as RANSAC and DBSCAN.

MAIN RESPONSIBILITIES

- Getting familiar with Python language (if not already)
- Working with point clouds (output format of LiDAR sensors)
- Studying algorithms for data processing (RANSAC, DBSCAN etc.)
- Implementing the above mentioned algorithms (separating the floor from the objects, the objects from each other etc.)

KNOWLEDGE MUST HAVE

- Algorithmical knowledge
- Data structure knowledge (linked lists, graphs, trees, hash maps, stack, queue etc.)
- Logical thinking
- Able to apply the above in a programming language

KNOWLEDGE NICE TO HAVE

- Python knowledge
- OOP concepts (class, abstract class, attribute, method inheritance)

YOUR WORKING CONTRACT COULD BE:

8h per day

CNC FOR PCB PROTOTYPING - MECHANICAL

PROJECT DESCRIPTION

Create a CNC machine to be use for fast prototyping of custom PCB. The hardware part is already available and has to be used and has to be integrated in the project. Some of the mechanical parts are also available and requires some modifications/redesign for the existing ones and design for the rest.

At the end, is is expected that the CNC will be able to create unique PCB, based on the imported file in the application.

MAIN RESPONSIBILITIES

- design and create mechanical components. adapt or redesign the existing components.
- assembly of mechanical and hardware components
- support in integration of software with mechanical and hardware components

KNOWLEDGE MUST HAVE

- Good knowledge of mechanical design and operation
- Basic understanding of software operation and design
- Basic understanding of electronics operation and design
- Basic understanding of embedded systems operation and design
- Practical experience/abilities

KNOWLEDGE NICE TO HAVE

- Advanced knowledge of mechanical design and operation
- Experience with CAD design
- Good understanding of software operation and design
- Good understanding of electronics operation and design
- Good understanding of embedded systems
- Programming skills (python is an advantage)
- Previous experience with hobby projects

YOUR WORKING CONTRACT COULD BE:

6h per day

CNC FOR PCB PROTOTYPING - SOFTWARE

PROJECT DESCRIPTION

Create a CNC machine to be use for fast prototyping of custom PCB. The hardware part is already available and has to be used and has to be integrated in the project. Some of the mechanical parts are also available and requires some modifications/redesign for the existing ones and design for the rest.

At the end, is is expected that the CNC will be able to create unique PCB, based on the imported file in the application.

MAIN RESPONSIBILITIES

- creates the graphic interface to control the CNC (uploading files, convert - if necessary)
- develop and integrate software with mechanical and hardware components (sensors, motors, etc)

KNOWLEDGE MUST HAVE

- Programming skills (advanced with Python)
- Embedded systems basic
- Basic understanding of mechanical operation and design basic
- Basic understanding of electronics operation and design

KNOWLEDGE NICE TO HAVE

- Experienced with r-pi or linux
- Previous experience with hobby projects
- Good understanding of mechanical operation and design basic
- Good understanding of electronics operation and design

YOUR WORKING CONTRACT COULD BE:

6h per day

TRAINING MANAGEMENT PLATFORM

PROJECT DESCRIPTION

A web application to manage trainings, technical presentation and knowledge sharing from company. All this are stored and visible to all employees.

MAIN RESPONSIBILITIES

- Researching, designing, implementing, and managing software programs
- Testing and evaluating new programs
- Writing and implementing efficient code
- Training users
- Present the final product"

KNOWLEDGE MUST HAVE

- Knowledge of an OOP language
 - Knowledge about Databases
 - Experience with HTML, CSS, JS
 - Knowledge about HTTP, REST
- The ability to learn new technologies quickly
- An analytical mind
 - Good communication skills
 - Attention to detail

KNOWLEDGE NICE TO HAVE

- Knowledge of a back-end framework (NET, Spring)
 - Knowledge of a front-end framework (Angular, reactJS, vueJS ...)
 - Knowledge of an ORM
 - Experience with a database (PostgreSQL, MongoDB)
- Experience with a DBMS

YOUR WORKING CONTRACT COULD BE:

8h per day





SAM

MCAL DEVELOPMENT

PROJECT DESCRIPTION

Develop an MCAL source code using generated and manual code (C language).

- Get accustomed with the automotive world using the actual tools used in Continental
- The aim of the project is to prepare the students for the next step in their career as a software developer in automotive
- The students should acquire the necessary skills in order to easily integrate in an automotive project

MAIN RESPONSIBILITIES

- Develop a MCAL source code based on given requirements
- Create a MCAL configuration in the Tresos and integrate the generated code into the project
- Configure components like MCU, GPIO, ADC, Timers
- Write code to fully implement the requirements
- Create test cases to test the implementation
- Debug and fix the software if needed
- Develop the application on an automotive microcontroller (Infineon - Aurix)
- Introduction in Autosar standard
- Handle generated and manual code based on a V-cycle implementation
- Get familiar with tools used in Continental (Tresos, Trace32, Catch)

KNOWLEDGE MUST HAVE

- C language
- Microcontroller knowledge

KNOWLEDGE NICE TO HAVE

- Electrical/ electronical knowledge

YOUR WORKING CONTRACT COULD BE:

4h per day

MKC1 SIMULATOR - PRESENTATION BENCH

PROJECT DESCRIPTION

Develop the mechanics needed to mount the MKC1 unit and different pedal feel simulators on a rack.

MAIN RESPONSIBILITIES

- Understand the requirements from the system
- create the 3D model
- create the drawings
- help on assembling the test bench

KNOWLEDGE MUST HAVE

- Catia 3D software
- Tolerance calculation
- Drawing set up
- Rezistenta materialelor

KNOWLEDGE NICE TO HAVE

- Organe Masini
- Hidraulica si pneumatica
- Tehnologia fabricatiei

YOUR WORKING CONTRACT COULD BE:

4h per day



STATIC RELAYS BUILT WITH MOS-FET TRANSISTORS

PROJECT DESCRIPTION

The project will be done with two types of mos-fet transistors, their control will be done in arduino, and the control interface will be done in Python or Labview.

MAIN RESPONSIBILITIES

- Design, build prototype PCB
- develop the software for microcontroller
- python , Labview.

KNOWLEDGE MUST HAVE

- hardware design
- electronic
- microcontroller
- python

KNOWLEDGE NICE TO HAVE

- LabView

YOUR WORKING CONTRACT COULD BE:

4h per day

ELECTRONIC POWER SWITCH

PROJECT DESCRIPTION

Design, build and test a power switch which can be used specifically for short-circuits tests.

MAIN RESPONSIBILITIES

- Develop hardware schematic and PCB and test device.

KNOWLEDGE MUST HAVE

- Electronic components, functionality.

KNOWLEDGE NICE TO HAVE

- Eagle
- Orcad

YOUR WORKING CONTRACT COULD BE:

4h per day



PYTHON CODING FOR DESIGN TOOL

PROJECT DESCRIPTION

Develop an application to automate Design process using Python.

MAIN RESPONSIBILITIES

- Design the application
- Develop the application
- Test the application
- Create an interface

KNOWLEDGE MUST HAVE

- Intermediate to advanced knowledge of Python programming language

KNOWLEDGE NICE TO HAVE

- Experience in working with Python programming language
- Experience with file parsing

YOUR WORKING CONTRACT COULD BE:

6h per day

ELECTROMAGNETIC SIMULATION OF ELECTRICAL MOTORS

PROJECT DESCRIPTION

- Electrical Motor Desing using different electromagnetic simulation methods.
- Finite Element Analysis (FEA) of a Braking System Motor. Optimization and possible cost reduction.
- Studying Electrical Motors in 2D/3D Electromagnetic Simulations.

MAIN RESPONSIBILITIES

- Braking System Motor Design
- FEA Analysis Simulation
- Performance Increasing and Optimization

KNOWLEDGE MUST HAVE

- Electrical Motors Basics Knowledge
- Electromagnetism Basic Knowledge (electronic components, electricity (Ohm's Law, Kirchhoff's Laws), magnetism (Electromagnetic Induction Law))

KNOWLEDGE NICE TO HAVE

- Finite Element Method Analysis
- AutoCAD Basic Knowledge
- Basic Design Knowledge"

YOUR WORKING CONTRACT COULD BE:

6h per day



DC-DC CONVERTER

PROJECT DESCRIPTION

Design and test a buck, buck-boost convertor.

MAIN RESPONSIBILITIES

- create hardware schematic, develop PCB and test the device

KNOWLEDGE MUST HAVE

- Electronic components basic knowlegde
- Basic electronic topologies knowledge

KNOWLEDGE NICE TO HAVE

- Eagle
- Orcad

YOUR WORKING CONTRACT COULD BE:

4h per day

DC MOTOR SPEED CONTROL WITH TI MOTOR DRIVE KIT

PROJECT DESCRIPTION

Design the scalar speed control of a DC motor using the TI Motor Drive kit. Development of the control method can be done in Matlab Simulink and code can be generated and integrated in the TI SW project.

MAIN RESPONSIBILITIES

- Plann the activities
- Gather the documentation
- Install the nedeed aplications
- Develop the control method in Matlab Simulink
- Validate the Simulink model
- Generate code
- Integrate the code in the SW project
- Run the system

KNOWLEDGE MUST HAVE

- Electrical machines knowledge (DC motors, BLDC, BLAC, construction and operating principle)
- Knowledge in control theory (scalar control) and signal processing
- Programming Skills (C)
- Matlab skills

KNOWLEDGE NICE TO HAVE

- Basic Electronics

YOUR WORKING CONTRACT COULD BE:

4h per day



ROBOTIC ARM

PROJECT DESCRIPTION

Develop Low Level + High Level Software for a robotic arm using C and Python

MAIN RESPONSIBILITIES

Design the application
Project documentation
Code development

KNOWLEDGE MUST HAVE

- Intermediate knowledge of C programming language
- Intermediate knowledge of Python programming language
- Intermediate knowledge of uC (+ Timers, PWM, ISR, ADC, Communication protocols), and how to program one
- Basic Electronics

KNOWLEDGE NICE TO HAVE

- Basic knowledge of V-Cycle
- Basic knowledge of AVR uC

YOUR WORKING CONTRACT COULD BE:

6h per day

POWERTRAIN EBIKE/SCOOTER

PROJECT DESCRIPTION

The main goal of the project is to develop a full performance bike/scooter with BLDC motor on the back wheel.

MAIN RESPONSIBILITIES

- Planning
- Concept development
- Develop hardware/application
- Testing and functionality

KNOWLEDGE MUST HAVE

- Basic electronics/mechanics
- Basic motor control
- Programming skills
- Microcontrollers knowledge

KNOWLEDGE NICE TO HAVE

- Basic design knowledge
- Previous experience with hobby projects

YOUR WORKING CONTRACT COULD BE:

8h per day



REAL-TIME COMMUNICATION PROTOCOL

PROJECT DESCRIPTION

The main goal of the project is to implement a real-time communication protocol between two computers that will pack and transfer files with different extensions. The system will be able to run in real time, in the sense that it will be able to assist the user from the production of the transfer files to the completion of their processing.

MAIN RESPONSIBILITIES

- Planning
- Concept Development
- Develop Application
- Testing and Functionality

KNOWLEDGE MUST HAVE

- Programming skills (Python)
- Minimum knowledge of protocols such as TCP/IP
- Software design knowledge

KNOWLEDGE NICE TO HAVE

Minimum knowledge of parallel programming

YOUR WORKING CONTRACT COULD BE:

8h per day

PYTHON BASED API FOR LAUTERBACH TESTING AUTOMATION

PROJECT DESCRIPTION

Development of an API for Lauterbach automation composed of test libraries and testing methods.

<https://www.lauterbach.com/frames.html?home.html>

https://www2.lauterbach.com/pdf/ide_user.pdf

https://www2.lauterbach.com/pdf/app_python.pdf

MAIN RESPONSIBILITIES

- Python based implementation of an application for test automation using Lauterbach debugger
- Project documentation

KNOWLEDGE MUST HAVE

- Python
- OOP
- TCP/IP

KNOWLEDGE NICE TO HAVE

- Microcontrollers

YOUR WORKING CONTRACT COULD BE:

8h per day



DEEP LEARNING BASED ON CNN FOR PEDESTRIAN DETECTION

PROJECT DESCRIPTION

Video or static images analysis using CNN's to detect pedestrians.

<http://www.ijmlc.org/vol9/855-A0037.pdf>

https://www.researchgate.net/publication/4171908_Pedestrian_detection_with_convolutional_neural_networks

<https://www.sciencedirect.com/science/article/abs/pii/S1350449521000669>

<https://www.hindawi.com/journals/misy/2021/5512382/>

MAIN RESPONSIBILITIES

- Development of a CNN based pedestrian detection solution
- Image processing and image acquisition
- Project documentation

KNOWLEDGE MUST HAVE

- Python
- OOP

KNOWLEDGE NICE TO HAVE

- OpenCV
- Image processing
- Convolutional Neural Networks

YOUR WORKING CONTRACT COULD BE:

8h per day

TRAILER WEIGHT STABILITY ASSIST FOR AUTOMOTIVE APPLICATIONS

PROJECT DESCRIPTION

Short Intro:

The goal of the project is to design, develop and test a system that can stabilize a car attached trailer if it losses control due to a wrong weight distribution. The project will consist on a theoretical analysis regarding the danger of losing control of a trailer because an unevenly weight distribution. In addition, this project will contain an experimental setup were a 1:18 scaled trailer attached to a car running on a roller bench, will be intentionally destabilized.

Desired outcome:

The objective of the project is to obtain a system that can sense the destabilization of the trailer and minimize the left to right oscillation of the assembly by reducing the speed of the roller bench.

MAIN RESPONSIBILITIES

- Project documentation
- Design the setup
- Create the application code
- Testing and functionality

KNOWLEDGE MUST HAVE

- Minimum knowledge of programming skills (C)
- Minimum Electrical knowledge skills
- Logical Thinking

KNOWLEDGE NICE TO HAVE

- Basic knowledge of Microcontrollers
- Basic knowledges about automotive industry

YOUR WORKING CONTRACT COULD BE:

8h per day



QR SCANNER - RECORD TRACKER

PROJECT DESCRIPTION

Currently we are keeping the tracking of how many cups of coffee we are drinking per month on a sheet of paper.

This project needs to offer the possibility to every person from the office to scan his personal QR code on a device that will be installed near the coffee machine.

The tool will generate a monthly report for each person.

MAIN RESPONSIBILITIES

- Create database and generate the QR Code
- Create hardware module
- Develop a script to synchronize database with QR code
- Create a presentation "How it's working"

KNOWLEDGE MUST HAVE

- Basic Programming skills
- Basic Hardware knowledge
- Excel knowledge

KNOWLEDGE NICE TO HAVE

- Python knowledge
- Raspberry Pi knowledge

YOUR WORKING CONTRACT COULD BE:

8h per day

TEST FIXTURE BRAKE FLUID LEVEL SENSOR

PROJECT DESCRIPTION

A brake fluid sensor needs to undergo testing before homologation. For testing it needs to be mounted in a special fixture for analyze.

MAIN RESPONSIBILITIES

- understand the requirements from the system
- create the 3D model
- create the drawings
- help on assembling the test bench

KNOWLEDGE MUST HAVE

- Catia 3D software
- Tolerance calculation
- Drawing set up
- Rezistenta materialelor

KNOWLEDGE NICE TO HAVE

- Organe Masini
- Tehnologia fabricatiei

YOUR WORKING CONTRACT COULD BE:

4h per day



DIGITAL INCLINOMETER FOR CAR SAFETY

PROJECT DESCRIPTION

Using one or two ESP-32 for reading and showing on an LCD (or smartphone) in real time: values of inclinometer giving feedback to the user.

MAIN RESPONSIBILITIES

Students shall code using Arduino IDE and design a basic real time changing GUI. Using two ESP-32 will reduce the wires, students will learn about Wi-Fi protocols, HTML and will improve C programming and electronic knowledge.

KNOWLEDGE MUST HAVE

- Basic Electronics & Microcontroller

KNOWLEDGE NICE TO HAVE

- Arduino IDE
- HTML programming language.

YOUR WORKING CONTRACT COULD BE:

4h per day





PYTHON LIBRARY FOR DATABASE ANALYSIS

PROJECT DESCRIPTION

The project will analyze big data bases for finding failures based on certain patterns. Technology used is Python and SQL

MAIN RESPONSIBILITIES

Develop libraries for SQL Server querying using Python. Generate automatic reports.

KNOWLEDGE MUST HAVE

- Python language intermediate
- SQL basic

KNOWLEDGE NICE TO HAVE

- programming

YOUR WORKING CONTRACT COULD BE:

6h per day

BLDC POSITION/SPEED CONTROL WITH TI MOTOR DRIVE KIT

PROJECT DESCRIPTION

Design the scalar position/speed control of a BLDC motor using the TI Motor Drive kit. Development of the control method can be done in Matlab Simulink and code can be generated and integrated in the TI SW project.

MAIN RESPONSIBILITIES

- Plan the activities
- Gather the documentation
- Install the needed applications
- Develop the control method in Matlab Simulink
- Validate the Simulink model
- Generate code
- Integrate the code in the SW project
- Run the system

KNOWLEDGE MUST HAVE

- Electrical machines knowledge (DC motors, BLDC, BLAC, constant speed operating principle)
- Knowledge in control theory (scalar control) and signal processing
- Programming Skills (C)
- Matlab skills

KNOWLEDGE NICE TO HAVE

- Basic Electronics

YOUR WORKING CONTRACT COULD BE:

4h per day



MEMMAP TOOL DEVELOPMENT

PROJECT DESCRIPTION

The main purpose of project is to create a library which read ELF file produced after compiling process of the project:

- Extract information regarding sectors inside
- Create a report of memory used based on this
- Based on project configuration create report of memory usage for each Logical block
- Generate report in console, Web-based or Excel format

MAIN RESPONSIBILITIES

- Develop python library
- Write organized code for future maintenance
- Develop reporting in WebBased or Excel based format

KNOWLEDGE MUST HAVE

- Python language intermediate

KNOWLEDGE NICE TO HAVE

- Understanding of 'compiling' process
- ELF standard
- Work in Web developing
- Work with Excel in python

YOUR WORKING CONTRACT COULD BE:

8h per day

UTIP TOOL DEVELOPEMENT

PROJECT DESCRIPTION

The main purpose of project is to manage binary files to produce one or more binary output files:

- Importing many formats of binary files
- Implement different comands to manage binary data
- Implement exporting of different format of files

MAIN RESPONSIBILITIES

- Develop python library
- Write organized code for future maintenance

KNOWLEDGE MUST HAVE

- Python language intermediate

KNOWLEDGE NICE TO HAVE

- Understanding of binary processing data, SREC, Intel HEX format

YOUR WORKING CONTRACT COULD BE:

8h per day



UART BUS LOAD CALCULATOR TOOL

PROJECT DESCRIPTION

For the LED headlamp with smart matrix we need to calculate the UART (CAN based) bus load depending on the number of CAN interfaces, number of matrixes on each interface and type of matrix used.
Based on the needed registers of each device and the minimum and maximum cycle time for each register we need to calculate the worst case time slots.
Graphical output of the timing diagrams would be a plus.
Input of configuration file and selection should be defined (e.g. XML)
Various programming tools and technologies can be used to parse the configuration text files and generate the output in various readable and comprehensive way (e.g. Python, C#, other)

MAIN RESPONSIBILITIES

Main phases:

- study the existing uart devices and define the general requirements
- define the general architecture of the tool - input output model
- define the configuration input structure (xml / other types)
- define the interface with the user and output format
- define the device specific load (nr of registers used, relevant worst case data flow)
- develop the tool core (any programming language applicable)
- tool testing with different configuration

The tool has to be scalable, to allow new devices to be added without new development, simple and intuitive configuration input format.

KNOWLEDGE MUST HAVE

- Programming skills (C# or C++ or Python)

KNOWLEDGE NICE TO HAVE

- General knowledge about serial communication protocols: UART / CAN

YOUR WORKING CONTRACT COULD BE:

6h per day

TOOL FOR INSTRUMENT AUTOMATION - LABVIEW BASED

PROJECT DESCRIPTION

Develop LabVIEW modules that interact with various measurement equipment (Oscilloscope, Multimeter, Programmable Power Supply, etc).
These modules are used for test automation.
Communication with those devices is done via LXI, RS232, GPIB, etc.

MAIN RESPONSIBILITIES

- Develop the libraries for Power Supply, Oscilloscope and Digital Multimeter. The main development environment will be LabVIEW.
- Integrate the libraries in NI TestStand for test automation
- create documentation for further usage

KNOWLEDGE MUST HAVE

- Basic Programming Skills
- Good Understanding of Measurement Equipment and measurement (Nyquist Theorem, Signal processing, etc)

KNOWLEDGE NICE TO HAVE

- LabVIEW Knowledge is a big advantage

YOUR WORKING CONTRACT COULD BE:

8h per day



RESONANT BOOST CONVERTER STUDY

PROJECT DESCRIPTION

Comparative study of resonant boost converter topologies and main components characteristics.

MAIN RESPONSIBILITIES

Detailed description of resonant boost converter topologies including spice simulations and mathcad calculus examples.

KNOWLEDGE MUST HAVE

- Know-how of dc-dc converter

KNOWLEDGE NICE TO HAVE

- AP Spice
- LTspice
- MathCAD

YOUR WORKING CONTRACT COULD BE:

4h per day

DEVICE MAPPING FILES GENERATOR

PROJECT DESCRIPTION

Generate several text files based on an Excel sheet that is filled in advance using a template. Mapping files are used to configure devices used in automation scripts. A graphical user interface would be a plus.

MAIN RESPONSIBILITIES

- Analyze Excel input file.
- Apply specific rules for each type of device.
- Create text files using templates
- Create log files
- Create if possible a GUI for easy usage
- Create documentation

KNOWLEDGE MUST HAVE

- Programming skills (C# or C++ or Python)

KNOWLEDGE NICE TO HAVE

-

YOUR WORKING CONTRACT COULD BE:

4h per day



CAN MESSAGE SIMULATOR

PROJECT DESCRIPTION

CANoe is a tool used widely in automotive industry that enables simulation of communication protocols (CAN/ LIN etc).

The scope of the project is to develop small modules in CAPL with GUI that will facilitate easier prototyping and validation of CAN messages for End of Line toolbox.

The complexity of this project is low to medium and will expose the student to programming in C and getting a good understanding of CAN Communication protocol.

MAIN RESPONSIBILITIES

- Learn more about CAN communication Bus
- Learn CAPL - C based programming
- Implement functions, write documentation
- Validate the CAPL modules

KNOWLEDGE MUST HAVE

- Basic C Programming

KNOWLEDGE NICE TO HAVE

- C

YOUR WORKING CONTRACT COULD BE:

8h per day





REAL-TIME TESTER FOR JUNCTION TEMPERATURE OF POWER MOS-FETS

PROJECT DESCRIPTION

Create a software application capable of real-time evaluation of the temperature inside Power MOS-FETs (on an already existing hardware platform).

MAIN RESPONSIBILITIES

Develop the required software (e.g. in Arduino IDE), evaluate the measurement accuracy.

KNOWLEDGE MUST HAVE

- HW design

KNOWLEDGE NICE TO HAVE

- basic SW development in Arduino IDE

INTELLIGENT LOAD SIMULATOR FOR DC MOTORS

PROJECT DESCRIPTION

Mechatronic device intended to be coupled with an Electrical Motor shaft and which can simulate different levels of mechanical loads.

MAIN RESPONSIBILITIES

- Develop and integrate the mechanical
- hardware and software (e.g. in Arduino IDE) components

KNOWLEDGE MUST HAVE

- HW design

KNOWLEDGE NICE TO HAVE

- basic SW development in Arduino IDE



CURVE TRACER FOR SEMICONDUCTORS

MAIN RESPONSIBILITIES

- develop hardware schematic and PCB
- develop the required software (e.g. in Arduino IDE)
- measurement accuracy evaluation

PCB WORKSTATION MADE WITH ACUPUNCTURE NEEDLES

PROJECT DESCRIPTION

The workstation consists of a base plate with slots in which PCB holders of a various configuration slide to hold all shapes and sizes of PCBs. Each needle holder has a bit of flex which allows it to maintain downward pressure for a positive connection

MAIN RESPONSIBILITIES

- Basic knowledge in electronic field and design all interfaces needed for needles adaptors; choose electrical components; interface equipments; electrical parameters check
- Mechanical knowledge about 3D/2D modeling tools (Catia V5)

KNOWLEDGE MUST HAVE

- mechanical design and electronics

YOUR WORKING CONTRACT COULD BE:

4h per day

MOS FET AS CURRENT SENSOR

PROJECT DESCRIPTION

The intention is to approach an application that use H Bridge MOS-FET as current and junction temperature sensor

The theory show that is possible to use the MOS FET as Current and temperature sensor, in the same time.

MAIN RESPONSIBILITIES

- Good knowledge about RDS ON and MOSFET behavior
- AC/DC knowledge
- DC and PWM behavior
- Sample rating of PWM

KNOWLEDGE MUST HAVE

- programming
- electronic components

YOUR WORKING CONTRACT COULD BE:

4h per day

SENSOR (MEMS) AS APPLICATION IN AUTOMOTIVE

PROJECT DESCRIPTION

Monitoring T deg and Rh throught BTLE (multipoint) usig GUI WIN10;

KNOWLEDGE MUST HAVE

- programming
- electronic components

YOUR WORKING CONTRACT COULD BE:

4h per day



DESIGNING A SEMI-AUTOMATED ARM FOR ESD BENCH

PROJECT DESCRIPTION

Design a semi-automated arm usable in ESD testing process

KNOWLEDGE MUST HAVE

- Mechanical design and programming

YOUR WORKING CONTRACT COULD BE:

4h per day

AUTOMATIC TESTING BASED ON ARTIFICIAL INTELLIGENCE (AI) CONCEPTS

PROJECT DESCRIPTION

This project is intended to make a new system based on AI / ML / NN concepts and analyze the behavior of different electrical signals to qualify if the requirements are fulfilled. As start-up will be to detect some short to GND or Vbat to some ECU pins in standby / idle or in execution states.

MAIN RESPONSIBILITIES

- Create a microcontroller C/C++ application including AI (ML/NN) to check electrical signal behavior
- Design a NN, Train the NN, validate the NN, test electrical real signals using the model.

KNOWLEDGE MUST HAVE

- Machine Learning (ML)/ Neural Network (NN)/ Artificial Intelligence (AI): Create, Learn/Train, Test a NN.
- C / C++, Python programming languages
- Basic knowledge of electronic components
- Basic knowledge of microcontrollers

KNOWLEDGE NICE TO HAVE

- Linux / Yocto / Edge Impuls / FPGA
- worked with python (Pycharm)
- experience with different developement boards

YOUR WORKING CONTRACT COULD BE:

8h per day

BATTERY MANAGEMENT SYSTEM

PROJECT DESCRIPTION

Design, build and test a battery management system for Lithium cells.

MAIN RESPONSIBILITIES

- Design and build prototype PCB
- basic microcontroller programming.

KNOWLEDGE MUST HAVE

- Electronic design
- Arduino

KNOWLEDGE NICE TO HAVE

- Power supply
- PCB design
- ADC converters
- C programming

YOUR WORKING CONTRACT COULD BE:

8h per day

PYTHON LIBRARY FOR ARXML FILES

PROJECT DESCRIPTION

Python library used for parsing and analyzing ARXML files (now, Classic AUTOSAR v4.2 + v4.3), object serialization to ARXML structured files and reporting tool. Easy to extend; it has an OOP implementation, compliant with AUTOSAR standard class hierarchy.

The tool will be used by project teams that actively use ARXML files for SoftwareComponents integration.

MAIN RESPONSIBILITIES

The student should further develop the source code of the Python lib based on given requirements (input from colleagues that (will) use the lib).

Why not, fix or improve the current implementation. (Any ideas are welcomed!)

Introduction in AUTOSAR standard.

KNOWLEDGE MUST HAVE

- Analytical thinking
- Basic knowledge in Python/C/C++

KNOWLEDGE NICE TO HAVE

- Advanced Python knowledge (eg: scope - LEGB rule; mutable/immutable datatypes; comprehension; decorators, generators, iterators; context managers)
- OOP knowledge (Design Patterns)

AUTOMATIZED VISUAL INSPECTION SYSTEM OF PCBs FOR R&D

PROJECT DESCRIPTION

Design and Implement a simple robotic arm driven by servomotors which will move a small video camera of a cheap microscope; the arm will be controlled via a simple joystick

MAIN RESPONSIBILITIES

- Design, build, test a prototype electronics + mechanics
- basic C programming

KNOWLEDGE MUST HAVE

- Arduino
- C language programming
- servomotors
- stepmotors

TEST AUTOMATION FRAMEWORK PLUGIN FOR AUTOMATIC CONFIGURATION

PROJECT DESCRIPTION

Test Automation tool requires manual updates with each released version. The tool is developed in C# and provides the possibility to integrate different plugins. Develop a plugin to facilitate the automatic update of the Test Automation Framework configuration for each release.

MAIN RESPONSIBILITIES

- Develop a plugin for automatic configuration of the test automation framework
- parse and store the existing configuration data(xml files) according to the specification
- merge new configurations with stored data
- reuse specific data bases from current tool version, before updates
- consistency check of the tool files

KNOWLEDGE MUST HAVE

- Programming skills (C#)

KNOWLEDGE NICE TO HAVE

- Experience with file parsing

YOUR WORKING CONTRACT COULD BE:

4h per day

ENERGY RECOVERY E-LOAD

PROJECT DESCRIPTION

Create an E-Load (electronic load) that simulate power resistors and that can recover a significant amount of absorbed energy, that can be stored in an accumulator for further usage. The E-Load will dissipate much less heat than the classic resistor

MAIN RESPONSIBILITIES

- Information and documentation
- Defining the schematic
- Needed component acquisition
- PCB design and manufacturing (or test board instead)
- Embedded programming (controller or FPGA)
- Tests and debugging

KNOWLEDGE MUST HAVE

- Electronic components, functionality
- Embedded C

KNOWLEDGE NICE TO HAVE

- Previous experience with amateur, personal, technical projects is considered as a plus.
- Eagle

YOUR WORKING CONTRACT COULD BE:

8h per day

SELF-TESTING FUNCTIONAL SYSTEM FOR SERIES PRODUCTION OF AUTOMOTIVE ECU

PROJECT DESCRIPTION

Develop test software sequence to validate correct functionality of the Venturi test system via NI TestStand IDE.

MAIN RESPONSIBILITIES

- Design and make test setup, resource allocation.
- Develop test sequence in NI TestStand.
- Validate automotive communication protocols (CAN, LIN, Kline, Ethernet).
- Verify analog measurements with multiple acquisition devices (DMM, Digitizer, Ambient Temperature Sensor)

KNOWLEDGE MUST HAVE

- Electronic components knowlegde
- Programming Skills

KNOWLEDGE NICE TO HAVE

- NI TestStand is considered as a plus

YOUR WORKING CONTRACT COULD BE:

8h per day

DV/PV VIBRATION TESTS VALIDATION USING MEMS ACCELEROMETER SENSOR

PROJECT DESCRIPTION

Develop a measurement device capable to read vibrations, temperature and humidity using sensors and transmit data to a PC through a serial communication

MAIN RESPONSIBILITIES

- Create a requirements list for the measurement device.
- Order parts for hardware.
- Design and develop the schematic.
- Create PCB circuit for measurement device based on schematic.
- Design and implement the microcontroller firmware.
- Driver development for measurement device.
- Test and debug for hardware, firmware and driver

KNOWLEDGE MUST HAVE

- Electronic components,functionality
- Embedded C

KNOWLEDGE NICE TO HAVE

- Previous experience with amateur, personal, technical projects is considered as a plus.
- Eagle

YOUR WORKING CONTRACT COULD BE:

8h per day

TEST EXECUTION MONITORING & ERROR NOTIFYING TOOL

PROJECT DESCRIPTION

“Short Intro & Goal:

During the product qualification phases the test equipment`s are being used to operate, check and record the performance of the Electronic Control Units (ECU) across specified environmental (temperature, humidity, vibrations..) and electrical (different voltage levels) test conditions. Most of the tests that are being executed during product validations are long term ones, which means that the equipment`s are not always supervised by operators and if an error occurs during the period that the equipment is running it might take a while to detect it, resulting in delays.

The main goal of the project is to develop and integrate an API within the existing test framework capable of notifying the test equipment operator/user of the error/s that occurred. (The notifications must contain relevant information`s such as: test cycles, ECU conditions (voltage level, temperature, humidity..) during test execution. All the conditions are obtained by interacting with different equipment`s).

Expected outcome:

At the end of the project, it is expected to provide a beta version of the API based on a list of requirements crated during meeting synchronization with the stakeholders. The API must provide feasible solution to monitor error types that can occur on a test equipment and notify the operator/user by using off the self-solutions.

The API can be developed in LabVIEW, C/C++, C#, python.”

MAIN RESPONSIBILITIES

- Gain knowledge on test equipment`s used during product qualification phases
- Gain knowledge on product qualification test framework
- Create a list of requirements from stakeholders` meetings
- Define operator/user notification template (containing relevant information`s)
- Develop an API in a known programing language (LabVIEW, C/C++, C#, python.)
- API Integration within the test framework
- Solution testing phase
- Project documentation

KNOWLEDGE MUST HAVE

- Soft-skills:
- Dedicated;
- Cooperative;
- Perseverant;
- Troubleshooting;
- Resourceful;
- Willingness to learn;
- Thinking outside the box.

Technical-skills:

- Basic-Intermediate knowledge regarding electronic components
- Basic-Intermediate knowledge into the usage and PC-interface of DMM, Power Supplies, Oscilloscopes and other type of equipment's.
- Basic-Intermediate knowledge on programming language - loops (for, while, do while), condition cases (if, elseif, switch).
- Intermediate knowledge on basic algorithms (sort algorithms, search algorithms, string matching and parsing algorithms, dynamic programming)
- Intermediate knowledge - LabVIEW, C/C++, C#, python"

KNOWLEDGE NICE TO HAVE

- Overview regarding Electronic Control Unit products qualification/validation setup and test framework.
- Know-how regarding test equipment's used during Electronic Control Unit product qualification phases. (Design and Product Validation)
- Improved of electronics skills.
- API Requirements creation
- API development
- API Integration within the test framework.

YOUR WORKING CONTRACT COULD BE:

8h per day

ADVANCED ELECTRONIC FUSE

PROJECT DESCRIPTION

Goal:

The goal of the project is to develop an advanced electronic fuse for protecting automotive products and test equipment from various situations such as overcurrent, overvoltage, or faults.

Expected results:

At the end of the project, it is expected to have developed a prototype of the module, which involves the hardware module consisting in the electronics required for performing the task of electrical measuring, triggering, and switching. Although in correlation with the hardware module, there is the need for embedded software development for a microcontroller. Additionally, the student shall develop a simple communication protocol for integration with more complex solutions and a graphical-user-interface for configuration of the device.

MAIN RESPONSIBILITIES

- Develop and improve her/his electronics knowledge required to design, model and build the device.
- Comprehend documentation regarding electrical protection.
- Model and simulate the device for a deeper understanding of the phenomena.
- Design the hardware in minimalist and cost-effective manner.
- Develop and improve her/his embedded knowledge required to design and build the intelligent part of the project by means of using a microcontroller to monitor the parameters.
- Develop and improve her/his skills in C/C++ language by engaging in writing the firmware for the microcontroller used for this project."

KNOWLEDGE MUST HAVE

- Basic-Intermediate knowledge regarding integrated circuits;
- Basic-Intermediate knowledge understanding electrical schematics;
- Good programming knowledge (C, C++, C#)"

KNOWLEDGE NICE TO HAVE

- Basic-Intermediate knowledge understanding the functionality of Analog-to-Digital/Digital-to-Analog converters;
- Basic-Intermediate knowledge understanding the process of data acquisition;"

YOUR WORKING CONTRACT COULD BE:

8h per day

SMART REMOTE POWER CONTROL

PROJECT DESCRIPTION

Goal:

Smart Remote Power Controller is a tool meant to protect devices connected to the mains supply from multiple defects that could occur during normal use (voltage drops or spikes, phase shifting, missing phase or neural). Also, it can log all the activity and notify the user (via Wi-Fi or GSM) if a supply defect has occurred, allowing automatically or on-demand reconnection of the monitored device.

Expected results:

At the end of the project, it is expected to have developed a prototype of the module, and a control software which is able to create logs and remotely control the supervised devices.

MAIN RESPONSIBILITIES

- Learning the microcontroller architectures
- Reading documentation regarding methods of current and voltage measurements
- Reading documentation regarding Wi-Fi and GSM communication
- Create block diagrams for Hardware and Software
- Develop, simulate, and test each individual components of the block diagram, both Hardware and Software
- Develop the Hardware component of the system
- Develop the Software component of the system
- Calibrate the complete solution

KNOWLEDGE MUST HAVE

- Basic-Intermediate knowledge regarding integrated circuits;
- Basic-Intermediate knowledge understanding electrical schematics;
- Good programming knowledge (C, C++, C#)

KNOWLEDGE NICE TO HAVE

- Basic-Intermediate knowledge understanding the functionality of comparators, and operational amplifiers
- Basic-Intermediate knowledge understanding the functionality of Analog-to-Digital/Digital-to-Analog converters;

YOUR WORKING CONTRACT COULD BE:

8h per day

METRIC UPDATE AUTOMATION

PROJECT DESCRIPTION

Short Intro:

In our project, to gather the project status in terms of requirements availability and regarding testcase availability, maturity and execution a so called TREK metric is in use. This SQL database is running every night and shows the current status after the update of all DOORS specifications. The filtering and visualization of the RAW data is done in an Excel sheet.

Desired Outcome:

Create a Jenkins job that automatically updates the excel file after the TREK tool completes its data reading from DOORS, then checks in the file on share-point so others can access the latest information.

MAIN RESPONSIBILITIES

- Develop a script to deliver the results mentioned above
- Test the script in a real project
- Create "How To" documentation

KNOWLEDGE MUST HAVE

- C / Groovy programming skills
- Python programming skills
- Object oriented programming (OOP) (it's a plus)
- Logical and structural thinking
- Good communication skills

KNOWLEDGE NICE TO HAVE

- DOORS application
- Excel

YOUR WORKING CONTRACT COULD BE:

8h per day

QUANTITATIVE REQUIREMENTS TEST COVERAGE OVERVIEW

PROJECT DESCRIPTION

Nowadays requirements test coverage is measured based on qualitative attributes :

- Not covered
- Partially covered
- Fully covered

But the measurement of this values are missing from current requirements test coverage (10%, 50% 100%)

The project proposes one theoretical solution on how this can be achieved.

The output shall be a prove of the concept having automated the metrics part for the coverage after test case design and the coverage after test execution based on the selected test cases.

In this way we will know how many requirements have been partially covered , fully covered etc . Also during a testing session we will know how many requirements that are planned to be executed are partially/fully covered by test cases .

Nevertheless a better overview of test cases and requirement coverage is given, which will result in increasing the quality of the testing process.

MAIN RESPONSIBILITIES

- Develop a script to deliver the results mentioned above
- Test the script in a real project
- Create "How To" documentation

KNOWLEDGE MUST HAVE

- Programing skills
- Object oriented programming (OOP) (it's a plus)
- Logical and structural thinking
- Good communication skills

KNOWLEDGE NICE TO HAVE

- DOORS application
- Excel

YOUR WORKING CONTRACT COULD BE:

8h per day

FLASHING ECU SOFTWARE OVER-THE-AIR(OTA)

PROJECT DESCRIPTION

Using a raspberry pi as a intermediate between you and the target ECU, send your compiled software to the raspberry, have the RPI communicate with the ECU by CAN, and update the software on the ECU.

First, you should connect to the raspberry by using ssh. This way you overcome the problem of connecting via Bluetooth or WIFI as not every workstation that wants to connect to the RPI has these drivers enabled.

Second, you should use a "bridge" between RPI and CAN Bus (bridge = SPI Bus which is supported by the RPI + CAN controller(e.g. MCP2515) + CAN transceiver(e.g. MCP2551)).

Third, have the ECU connected to the RPI.

MAIN RESPONSIBILITIES

- Learning the microcontroller architectures
- Reading documentation regarding Wi-Fi
- Create block diagrams for Hardware and Software
- Develop, simulate, and test each individual components of the block diagram, Software
- Develop the Software component of the system

KNOWLEDGE MUST HAVE

- Embedded C
- Basic Python

YOUR WORKING CONTRACT COULD BE:

8h per day

TOOL FOR AUTOMATED LOG ANALYSIS

PROJECT DESCRIPTION

One of the biggest challenges in the testing in Automotive industry is to process and analyze the information provided by the big quantity of logs generated by the cars and test benches. One of the solutions to solve this challenge would be to automate as much as possible the process of analyzing the logs and extract the relevant information. The purpose of this tool is to address this challenge and make the life of our developers and testers easier, in the same time speeding up development and testing processes inside our organisation.

MAIN RESPONSIBILITIES

Experience the entire process of software development by:

- establish the tool requirements together with the coordinator
- create the tool architecture
- implement the tool using the chosen programming language
- make decisions in choosing the best technical solution for the challenge at hand
- work with highly experienced and skilled mentors in order to fully experience the sw development world

KNOWLEDGE MUST HAVE

- Python, C++
- database
- web interfaces

YOUR WORKING CONTRACT COULD BE:

6h per day

OFFICE BOOKING TOOL

PROJECT DESCRIPTION

In pandemic times, when we all need to follow distancing restrictions, we saw the need to implement a tool to book an office desk (when needed) so that we can limit the number of colleagues that are going physically in the office. Beside this, the tool should allow the colleagues to see who is planning to go to office and when, and also what is the total number of the colleagues in the group that are planning to go to office.

MAIN RESPONSIBILITIES

Experience the entire process of software development by:

- establish the tool requirements together with the coordinator
- create the tool architecture
- implement the tool using the chosen programming language
- make decisions in choosing the best technical solution for the challenge at hand
- work with highly experienced and skilled mentors in order to fully experience the sw development world

KNOWLEDGE MUST HAVE

- Python, C++
- web development
- database

YOUR WORKING CONTRACT COULD BE:

6h per day

AUTOMATED LOGS PROCESSOR

PROJECT DESCRIPTION

Logs/traces are the main input for bugs analysis and we receive them in multiple formats archives, text or specific formats and sometimes even encrypted. Logs Processor will be a webtool that connects to Jira and downloads the corresponding logs attached to the bug then it decripts/extracts and converts them into a readable format. It will also have the option to search for a certain string in order to quickly locate the logs containing the problem reported.

MAIN RESPONSIBILITIES

- Experience the entire process of software development by:
- establish the tool requirements together with the coordinator
- create the tool architecture
- implement the tool using the chosen programming language
- make decisions in choosing the best technical solution for the challenge at hand
- work with highly experienced and skilled mentors in order to fully experience the sw development world

KNOWLEDGE MUST HAVE

- Python, C++
- web development

KNOWLEDGE NICE TO HAVE

- Experience in working with Python programming language and web development

YOUR WORKING CONTRACT COULD BE:

6h per day

ARTIFICIAL INTELIGENCE APPLIED FOR LIVE VIDEO FEED TRACKING

PROJECT DESCRIPTION

Project EAGLE is an "iDEAS Engineering Competition" sub-project designed as a Camera system with Ai image classification and tracking of objects on a predefined field/track.

The project shall implement the clasification part based on iDEAS track specifications and track moving objects (1:10 scale RC cars) that move autonomously.

The tracking shall take into account the following features: Lane Keeping, Lap Time, Objective Matching and Object tracking

MAIN RESPONSIBILITIES

- Learn About
- Image Classification
 - Object clasification
 - Image Processing

KNOWLEDGE MUST HAVE

- Python and Applied Machine learning frameworks
- Image Processing frameworks

KNOWLEDGE NICE TO HAVE

- Python knowledge

YOUR WORKING CONTRACT COULD BE:

8h per day

FULL STACK WEB APPLICATION DEVELOPMENT

PROJECT DESCRIPTION

Project <SQUIRRLE> is an "iDEAS Engineering Competition" sub-project designed around the Web App that should integrate with EAGLE and MOUSE to form the iDEAS App ecosystem.

This project will require an Internally Hosted Web App to be developed from scratch on a latest REACTJS/NEXTJS frameworks with full front/back end and cloud backed infrastructure.

Requirements will come in form of the current "iDEAS Engineering Competition" web-site, target for this is to develop an "MVP with Delivery deadline in September 2022 with development to continue well beyond that.

MAIN RESPONSIBILITIES

Learn About

- Web development using ReactJS/NextJS
- Hosting with cloud (aws) services
- Implement deployment methodologies
- Work with the iDEAS organizational team to implement the MVP

KNOWLEDGE MUST HAVE

- ReactJS
- NextJS
- AWS hosting
- MongoDB

KNOWLEDGE NICE TO HAVE

- ReactJS
- NextJS
- AWS hosting
- MongoDB

YOUR WORKING CONTRACT COULD BE:

8h per day

STORAGE MANAGER FOR TEST-BENCHES

PROJECT DESCRIPTION

Tool to monitor available space on Test-Benches

- Friendly user interface to monitor Test- Benches
- Create policies: clean older folders and files from remote Test-Benches
- Send emails when a policy alert is encountered

MAIN RESPONSIBILITIES

- Analyse the requirements proposed by mentor
- Define the software application architecture/design
- Software implementation

KNOWLEDGE MUST HAVE

- C++
- Python

KNOWLEDGE NICE TO HAVE

- DB (MySQL, MongoDB)
- Front-End (Angular)

YOUR WORKING CONTRACT COULD BE:

8h per day

REDIS - PERSISTENT DATA MANAGEMENT

PROJECT DESCRIPTION

For the Automotive Embedded System like Cluster Instrument and Infotainment in Vehicle (IVI) we want to evaluate additional persistence data management. In this context we plan to analyze and integrate REDIS component additional to existing qualified data handlers.

- Integrate the REDIS component under embedded Linux environment and verify the quality against ISO 25010.
- Define a unique simplified API which can be integrated to different runtime environment based on embedded system requirement
- Integrate the REDIS in context of Android runtime and allow access from application
- Provide access for exchange from REDIS to AWS Edge in context of the Continental framework

MAIN RESPONSIBILITIES

- Analyse the requirements proposed by mentor
- Define the software application architecture/design
- Software implementation

KNOWLEDGE MUST HAVE

- C++
- Python

KNOWLEDGE NICE TO HAVE

- Automotive Grade Linux (AGL)
- Android,
- AWS

YOUR WORKING CONTRACT COULD BE:

8h per day

FIJAC 2.0 - FAULT INJECTION AUTOMATIC CONTROLLER

PROJECT DESCRIPTION

Normally in any project which involves a software+hardware embedded system, beside functional and systems tests, there is an additional type of testing, named fault injection (or insertion). It shall make some errors like short to GND or Vbat or even short between lines / pcb layout paths. More over, there we have cases where we shall test fault insertions in communication lines, like SPI between microcontroller and PCU / SBC. During the years were developed different solutions from passive / manually to automatic, with high or low costs, resources (licenses, HW, modification knowledge) etc, but they are limited to the speed/ processing frequency and more important, are not connected with SWATT HILL or PLAST. Additionally, in 2.0 version we will improve the system by making short to GND or Vbat errors also outside PCB, on the ECU pins.

MAIN RESPONSIBILITIES

- Create a microcontroller C application
- Design and create a hardware circuit including Schematic, PCB layout with microcontroller and other components
- Create a driver and library for communication protocol in C, Python
- Try to make simple tests with SWATT to validate the project

KNOWLEDGE NICE TO HAVE

- worked with python (Pycharm)
- experience with different developement boards

YOUR WORKING CONTRACT COULD BE:

6h per day

A long-exposure photograph of a high-speed train at a station platform. The train is blurred, showing streaks of light from its headlights and interior lights. The platform is on the left, with a glass barrier and a white safety line. In the background, there are city buildings and a tower. A large yellow square with the letters 'UX' in black is overlaid in the center of the image.

UX

DATABASE OF AVAILABLE TEST CARS

PROJECT DESCRIPTION

This project is designed to provide the features for booking a car online from Continental available test cars and to avoid telephone or paper bookings.

The idea is to provide an easy-to-use application designed to stay up to date, giving administrators the opportunity to change / add / remove any vehicle featured on the site.

The system will check and store any information that the user can enter when making a booking request.

MAIN RESPONSIBILITIES

- Analyse the requirements proposed by mentor
- Define the software application architecture/design
- Software implementation
- Test functionality
- Propose new improvement futures

KNOWLEDGE MUST HAVE

- C++/Java
- OOP

YOUR WORKING CONTRACT COULD BE:

8h per day

BOOKING MECHANISM BASED ON CONTI BADGE

PROJECT DESCRIPTION

There are several products assigned to a team member: laptops, hardware, books, etc.

A system like RBS (Resource Booking System) can make usage of scanning with phone camera the QR of the taken objects and also scan the Conti badge and make the updates in the system.

Outcome: Inventory is easy to do and objects are not lost.

MAIN RESPONSIBILITIES

- Analyse the requirements proposed by mentor
- Define the software application architecture/design
- Software implementation
- Test functionality
- Propose new improvement futures

KNOWLEDGE MUST HAVE

- Scripting
- Web development

KNOWLEDGE NICE TO HAVE

- C/C++
- OOP

YOUR WORKING CONTRACT COULD BE:

8h per day



ROLE-PLAYING GAME (RPG) WITH VOICE

PROJECT DESCRIPTION

Reason: Kids in the car need to be entertained.

What to do: Make a Speech (TTS + Voice Recognition) interface for a good text-based RPG to be played by kids on the back seat.

Bonus: Using a build-in tablet-like device (not necessarily Android) and the project can also have a GUI.

Outcome: Kids are happy and everybody is happier!

MAIN RESPONSIBILITIES

- Analyse the requirements proposed by mentor
- Define the software application architecture/design
- Software implementation
- Test functionality
- Propose new improvement futures

KNOWLEDGE MUST HAVE

- C++/Python
- OOP

YOUR WORKING CONTRACT COULD BE:

8h per day

INSTANT FEEDBACK APP

PROJECT DESCRIPTION

Feedback is a tool that can help people evaluate themselves and their work and also how others perceive them.

The scope of this project is to implement a plugin for Microsoft Outlook or Teams that would facilitate instant feedback.

MAIN RESPONSIBILITIES

- Analyse the requirements proposed by mentor
- Define the software application architecture/design
- Software implementation
- Test functionality
- Propose new improvement futures

KNOWLEDGE MUST HAVE

- C++/Java
- OOP

YOUR WORKING CONTRACT COULD BE:

8h per day



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Continental 
The Future in Motion

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