Continental

No. crt.	Subject	Requirements	Description	Test required
1	Car/Vehicle diagnosis via smartphone.	Faculty: specialization in Computer Science or Information Technology; Skills: Medium knowledge of OOP; Medium/Advanced C/C++; Eclipse IDE. Should be a plus:Android SDK; Android Studio IDE.	The main objective of the application is to allow a smartphone to connect to the head unit via Bluetooth and make a complete diagnosis of devices present in the car using the DTCs (Diagnostic Trouble Codes). The main parts of the application would be: • enable the phone connection with the head unit via BT • establish a communication between phone and head unit • develop an Android application for the smartphone in order to read and interpret data from head unit • develop an application (emulator) to generate test DTC's.	C/C++, OOP
2	Communication bridge – FlexRay to CAN to LIN to USB	ANSI C knowledge , 32bit architecture microcontrollers, Digital electronic knowledge.	This device is able to create a communication bridge between two type of communication busses. The following communication busses could be take into account: CAN(500KB), CAN(1M), FlexRay, LIN(19200), LIN(9600), USB. The link between two busses could be done by configuration via USB.	ANSI C (advanced) 32bit architecture Microcontrollers(mid), Digital electronic knowledge(mid).
3	External rapid prototyping of vehicle air conditioning functionality using DCI-GSI from dSpace	Faculty of Automation and Computers or Electronics and Telecommunications Engineering; Understanding the automotive software structure; Matlab-Simulink and software development knowledge; Ability to understand English documents; Electronical knowledge will be an advantage.	Rapid prototyping is used in automotive industry to develop new control strategies with minimal impact for an existing system. For this diploma project will be used eRPT to enhance the Start- Stop strategy on the department's testing vehicle. In order to achieve this, the following steps should be followed: - establish the communication between autobox and ECU for rapid prototyping - create in Matlab-Simulink the acquisition model for internal vehicle temperature sensor - use the obtained temperature signal to improve existing Start-stop functionality	Matlab-Simulink

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4	Static Data Verification during Integration Testing	Faculty: Computer Science/ Automatics/ Electronics in terminal year; Java language; graphical interface (Java Swing); XML format; Eclipse IDE; Git (version control system) - optional.	Student will have to study different file formats used in automotive industry, e.g. ASAP format, ADD format, Coana dictionary format. The student will implement a Java program, which will perform automatically the data interface check during integration test, i.e the program will check if the data definition from the ASAP file is identical with the definition from specification (DDX, Coana dictionary, etc.). The results are written to a CSV file. The program will provide an optional graphical user interface, which will allow the user to configure the comparison process and to filter the results for easier analysis. The program will be able to connect to ADD database or use alternative formats for specification data definition, i.e. Coana dictionary.	Java
5	Low quiescent current power supply concept	Electronics Faculty (ETc, EA, etc...); Open to new, practical skills; Good knowledge of electronic analog circuits in general, and power supplies in particular.	The objective of the thesis is to analyze different switching mode power supplies (SMPS) and to determine ways of reducing the reverse quiescent current in case the supply is used in parallel with an always on linear power supply (LPS). The objective is to have a power supply that can supply very low currents (~50uA) with very low quiescent current (~30uA), but also be able to supply high currents (2-3A). Types of SMPS to be analyzed: buck converter, sepic converter, boost converter.	HW
6	Simple Telematics Application (STELA)	Good programming skills, good knowledge of C++ and Java language programming; Object Oriented programming; Web application programming in java is a plus.	Complete solution for a fleet management system. The system has to display on a web page informations about a truck fleet like where it is now, the current route, last routes and display them on a map. The complete system is composed of 3 parts: the onboard unit, a sever application to communicate with the omboard units and a web server to display the infromations gathered from the onboard units.	C++ and OOP (Java preffered)

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7	Tool for improving integration of BSW modules and SW components in an AUTOSAR project.	Computer Science, Automation, Electronics and Telecommunication, Informatics; Java knowledge and XML.	Autosar standard is used in all Electronic Control Units distributed in the car. The software is split in 2 parts: Applicative and Basic. The applicative part is composed by Software Components that are interconnected. The theme is to develop a tool which will facilitate the integration of the Software Components and BSW modules in the real customer project. You will implement an application in Java language through all SW development steps: requirements, design, coding and testing. For your daily work you have to work with professional SW development tools based on Eclipse.	Java
8	Logicad XML tool	Any OOP programming language XML, UML.	Having as input Logicad XML files: Creation of a tool for advanced comparison between Logicad modules/projects. Generation of design diagrams. Generation of module interface documentation.	OOP test: C# or Java.
9	Method of testing the communication interfaces of an Airbag Control Unit	The candidate we are looking for should be a student of Computer Science, Electronics or Electrical Engineering, with good engineering skills, able to quickly learn and adapt to new technologies and challenges.	The Airbag Control Unit (ACU) has a well-known role in saving lives. It is always a challenge to prove that the product we are delivering to our customers is robust and can work efficiently during its lifetime. Nowadays active and passive safety systems are networked; this leads to an increase complexity of communication channels, functions and variants. Here arise the potential of improving actual test methods and strategies and to examine new ones and implement them in actual processes.	Ansi C and Electronics.

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10	Wireless Diagnosis System	Technical university 3rd or 4th year student; Good C programming skills; Good microcontroller knowledge; Basic knowledge of GUI development (Visual Studio or similar).	How easy will it be to „ask" your car how it is „feeling" just by operating your mobile phone or laptop? Student will have the pleasure to design and implement on a development board equiped with WLAN module an embedded application responsible to center all car data comming through CAN interface from all other electronic devices responsible for powertrain, safety or multimedia and send it wireless to a mobile application. System will be based on a client-server architecture. Both the embedded and mobile applications will have to be implemented.	Embedded C; Microcontrollers.
11	Intelligent Key Diagnosis	Technical university 3rd or 4th year student; Good C programming skills; Good microcontroller knowledge.	Student will implement an innovative solution for storing diagnosis information in the Start/Stop key of the vehicle. Software will be supported by a Freescale S12 microntroller with low frequency communication between immobilizer and transponder key. Driver will be able to obtain full car diagnosis information and history just by presenting the key to the car service.	Embedded C; Microcontrollers.
12	eCall	Technical university 3rd or 4th year student; Good C programming skills; Good microcontroller knowledge; Unix programming knowledge (threads, sockets etc..) is a plus.	To help mitigate the consequences of serious road accidents across the EU, today the European Commission adopted two proposals to ensure that, by October 2015, cars will automatically call emergency services in case of a serious crash. The "eCall" system automatically dials 112 - Europe's single emergency number - in the event of a serious accident. It communicates the vehicle's location to emergency services, even if the driver is unconscious or unable to make a phone call. It is estimated that it could save up to 2500 lives a year. The winner of the selection will implement on a high-end device equipped with 32-bit ARM core, GNSS receiver and 2G modem an eCall software system that will feature crash detection algorithm, positioning and data reporting over GPRS by TCP/IP. System will be based on a client-server architecture. Both components (embedded and desktop application) will be designed and implemented by the student.	Embedded C; Microcontrollers.

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13	Automated test tool based on CANoe for Automotive Diagnosis subsystem	Any Computer Science related University.	In Automotive, Diagnosis subsytem represents the interface between the ECUs from the car and the outside world. It is used to detect the ECU faults and eventually adjust or test factory settings. What is intended from this diploma project is to implement a tool able to test the Diagnosis subsystem, which is implemented according to UDS standard. The tool will be implemented using CANoe specific programming language CAPL (very close to C programming language) and will have a user- friendly interface and a user manual. The tests will be configured in a txt file which will be afterwards parsed by the tool. The tool will not only check the positive response or diagnosis telegram length, like most Diagnosis test tools, but also the usefull bytes inside. This is why the tool will be project specific and for more complex diagnosis services the algorithms have to be implemented also in the tool.	C; Logic test.

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14	Matlab Simulink vs. LogiCAD as model based development tools for Instrument Clusters	AC, ETC Matlab Simulink	In our days, a truck it is a network of intelligent devices, controlling different parts of the truck. The instrument cluster communicates with all the other devices and provides information to the driver, being the main interface with the driver. This is why we are constantly challenged to develop simple to use but complex (as number of functionalities) instrument clusters. Model Based Development represent the next generation in SW Programming. Highly complex applications can be created in a visual and natural manner. An expert will show you how this is done using LogiCAD development tool. Then you have to do the same but using Matlab Simulink. Your output will be most valuable: - Implement basic libraries for an Instrument Cluster e.g. telltales, gauges - Compare Implementation posibilities between C, LogiCAD and Matlab Simulink - ROM/RAM and runtime coparison	Logical Tests; Matlab Simulink test.
15	2D/3D Graphical Interface development using CGI Studio	AC, ETC; Basic knowledge of microcontrollers; Basic knowledge of OOP; Knowledge of Photoshop or similar tools is an advantage.	In our days, a truck it is a network of intelligent devices, controlling different parts of the truck. The instrument cluster communicates with all the other devices and provides information to the driver, being the main interface with the driver. When center display is used, the information is displayed using 2D/3D graphical objects like bargraphs, icons or dynamic numbers or specific animations. An expert will show you how this is done on Instrument Cluster projects for manufacturers like IVECO or Hyundai. Then you have to: - analyze what graphical objects are usually needed for Instrument Clusters - define and implement generic graphical objects following our internal development process, in order to easily use them in new projects http://www.fujitsu.com/emea/services/microelectronics/software/cgistudio/	Logical test; Embedded C test.

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16	Automotive Generic Central Display	Electronics and Telecomunication Faculty, final year of study; Basic knowledge for analogic and digital Electronics; Basic knowledge for electrical measurements, usage of measurement equipments.	-generic color central display for central dashboard of the car - flexible HW arhitecture to fit both 7" and 8" LCD - capacitive touchscreen, multi-touch functionality - DC-DC convertor for power supply and backlight - CAN and LIN interfaces for cummunication with the car - touch screen controller - LVDS for video interface - optical bounding between LCD and touch screen	Technical HW paper writen test (same test like for HW engineers hiring);