Silicon Mobility
535 Route des Lucioles
Les Aqueducs – Bâtiment 2
06560 Valbonne /
Sophia Antipolis France

Ref: SM-STC010

Location: Sophia-Antipolis, France
Employment type: End of Engineering Studies Internship
Contract type: internship

INTERNSHIP: PROTOTYPING OF AN EMOTOR CONTROL SOFTWARE INTEGRATION WITH A VEHICLE CONTROL UNIT

The Automotive industry is living a revolution. Electrification, autonomous driving, diverse mobility, connectivity are trends that are drastically changing the industry's rules. Among all decisive topics revolutionizing cars in the next future, Silicon Mobility is committed to support the rapid advent of electric and hybrid cars.

Silicon Mobility is a technology leader for cleaner, safer, and smarter mobility. The company designs, develops and sells flexible, real-time, safe, and open semiconductor solutions for the automotive industry used to increase energy efficiency and reduce pollutant emissions while keeping passengers safe.

The company is opening an "6 to 9 months internship" position in its main Research and Development center ideally located in the Sophia-Antipolis Technology Park on the French Riviera.

You are a brilliant and passionate by real-time embedded software design and software architecture? You want to support the development of disruptive products accelerating the car's powertrain electrification? At Silicon Mobility, we like to light up our employee's potential. Are you up for the challenge? **Contact** us: send your resume and cover letter to Internship2021@silicon-mobility.com

ROLE & MISSIONS

As part of the Product team, you will be in charge of studying and validating the integration of a Vehicle Control Unit (VCU) software with an electric motor control application running on 2 different embedded processing units. The VCU is responsible for translating the driver's commands into e-motor controls based on the vehicle characteristics. The electric motor control application is in charge of the inverter and e-motor control. The study will imply:

1. To analyse the existing software and hardware processing unit hosting the VCU and eMotor control functions.
2. To define the optimal software integration architecture in matter of real-time performance, communication, ISO 26262 Functional Safety and cyber-security in accordance with the AUTOSAR standard (Automotive software standard) requirements.
3. To design a prototype of the proposed embedded software architecture
4. To support the realization of a functional Proof-of-Concept operating on real-target demonstrating the feasibility of the proposed software architecture.

Primary responsibilities of the position with a strong support of the product department include:

- Analysis of the current solution
- Analysis of the related automotive requirements (AUTOSAR, ISO 26262 and EVITA)
- Study different options of integration and their impact in terms of performances, bandwidth, safety and cyber-security.
- Specification and design of the Application Software Components implementing the VCU and eMotor control integration

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- Specification and design of Complex Device Driver implementing the optimized communication protocol.
- Creation of documentations in English (application notes and test reports) and associated presentation materials
- Participation to the Product Requirements

DEVELOPED SKILLS DURING THE INTERSHIP:

- Automotive system architecture
- Architecture design tooling
- AUTOSAR, ISO 26262 and Cyber-security standard understanding
- Matlab Simulink auto-code generation
- Embedded Software C-ANSI code design, debugging and compilation
- Debug and validate an application on a real target

The position requires pro-active involvement with all departments of the Company.

REQUIRED SKILLS AND EXPERIENCE

EDUCATION:

- Student of Bachelor/Master in Engineering/Science (Electrical or Automotive)

TECHNICAL SKILLS & EXPERIENCE:

- C programming skills, with the focus on embedded real time programming
- Protocol of communication
- Matlab Simulink
- Signal Processing, Closed-loop Control Algorithms
- Power electronics
- Software development cycle and techniques
- Electrical powertrain (e.g. battery, energy conversion systems, inverter)
- MS Office

LANGUAGE SKILLS:

- Fluent in English

BEHAVIORAL SKILLS:

- Good presentation and communication skills
- Time management
- Pro-active work attitude
- Independent and team working
- Constant quality improvement

REMUNERATION:

- Gross monthly salary of EUR 1.000
- Lunch tickets