Silicon Mobility

Internship Description

Multi-Levels Inverter Benchmark & Control Optimization

(SM-STC006 / 2022)

What we offer

Company	**SILICON MOBILITY SAS** *(immatriculée 815 085 659 000 28 RCS Grasse)* Siege social : Les Aqueducs – Bât 2 – 535, route des Lucioles – 06560 Valbonne Sophia-Antipolis 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 supporting 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. We are looking for a motivated candidate to join our R&D team based in Sophia-Antipolis on the Riviera. If you are interested, please contact us, and send us your application and CV to: **internship2022@silicon-mobility.com**
Offer ref.	SM-STC006-2022
Subject – Offer title	Multi-Levels Inverter Benchmark & Control Optimization
Duration	6 months– between February and September 2022
Work hours	35 hours per week
Work place	Silicon Mobility office, potentially teleworking sanitary conditions require it
Education	Internship for Master/Engineer Degree
Content/ mission	The Silicon Mobility solution is based on OLEA® FPCU (Field Programmable Control Unit that embeds a CPU core, programmable logic, memories, and peripherals). During this internship, the intern will join the R&D system team. The intern will work on the benchmark of the inverter topologies (multi-Level inverter topology). The intern will also participate in the optimization of e-motor control algorithms (dynamic deadtime insertion & compensation, motor torque estimator, active discharge, etc.). This internship aims at analyzing, defining, developing, and testing this solution. During internship period, several tasks will be addressed: 1. Learning phase and research In the course of this task, the intern will get familiar with the OLEA® APP - T222 INVERTER and the development tools including OLEA® COMPOSER environment and the AGILE development flow. The intern will perform research work on the domain of dynamic deadtime insertion and will start to evaluate solutions under Matlab/Simulink. 2. Specification and implementation During this phase, the intern will participate in the selection of the most appropriate solution to be implemented. The solution will be fully specified and implemented using OLEA® COMPOSER flow. Due to the safety-related features, this development shall comply with the ISO 26262 development guidelines 3. Verification and Documentation During this task, the intern will have to verify and characterize the efficiency of the dynamic deadtime insertion/compensation in different configuration using our

	Hardware in the Loop environment. A user guide will be then redacted to help users configure the dynamic deadtime feature.
Profile required	For this internship, we are looking for a candidate with good knowledge of power electronics, motor control algorithms, embedded systems, and embedded C programming. Good skills in electrotechnics, inverter topologies, Matlab Simulink, and DSPACE HIL Bench. The candidate shall be autonomous, rigorous with a strong team spirit. English speaking is required.
Expected Skills/knowledge	• Matlab/Simulink • Power electronics transistors • Safety • Advance algorithm control • Critical real-time embedded software on ARM processor • General knowledge of microcontroller development • Requirement analysis and specification writing • Quality management skills
Remuneration	1000€/month + Lunch tickets (Tickets Restaurant)