

# Silicon Mobility

## Apprenticeship Description

### Optimization of Advanced Inverter Control Algorithms (SM-STA01 / 2023)

## What we offer

Company	<p><b>SILICON MOBILITY SAS</b> (<i>immatriculée 815 085 659 000 28 RCS Grasse</i>)</p> <p><u>Siege social</u> : Les Aqueducs – Bât 2 – 535, route des Lucioles – 06560 Valbonne Sophia-Antipolis</p> <p>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.</p> <p>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.</p> <p>We are looking for a motivated candidate to join our R&amp;D team based in Sophia-Antipolis on the Riviera.</p> <p>If you are interested, please contact us, and send us your application and CV to: <a href="mailto:internship2023@silicon-mobility.com">internship2023@silicon-mobility.com</a></p>
	Offer ref. SM-STA001-2023
	Subject – Offer title Optimization of Advanced Inverter Control Algorithms
	Duration 3 months internship + 12 months from September 2023 to September 2024
Work hours	35 hours per week
Workplace	Silicon Mobility office
Education	Last year of Master (BAC+5 or equivalent)
Content/ mission	<p>The Silicon Mobility solution is based on OLEA® FPCU (Field Programmable Control Unit that embeds a CPU core, programmable logic, memories, and peripherals) System-on-Chip dedicated to automotive applications.</p> <p>During this apprenticeship, the apprentice will join the R&amp;D system team. The apprentice will participate in the optimization of advanced e-motor control algorithms.</p> <p>This apprenticeship aims to analysing, defining, developing, and testing these algorithms</p> <p>During the apprenticeship period, several tasks will be addressed:</p> <ol style="list-style-type: none"> <li><u>Learning phase and research</u> The apprentice will get familiar with the Inverter control algorithms and the development tools including OLEA® COMPOSER environment and the AGILE development flow. The apprentice will perform research work on advanced e-motor control algorithms and will start to evaluate solutions under Matlab/Simulink.</li> <li><u>Specification and implementation</u> During this phase, the apprentice will participate in the selection of the most appropriate solution to be implemented. The solution will be fully specified and implemented using Silicon Mobility development flow. Due to the safety-related features, this development shall comply with the ISO 26262 development guidelines</li> </ol>

Profile required	<p>3. <u>Verification and Documentation</u></p> <p>During this task, the apprentice will have to verify and characterize the efficiency of the advanced control algorithms in different configuration using our Model In the Loop and Hardware in the Loop test environments. A user guide will be then redacted to help users to configure these algorithms.</p>
	<p>For this apprenticeship, we are looking for a candidate with good knowledge of power electronics, motor control algorithms, and embedded systems.</p> <p>Good skills in electrotechnics, inverter topologies, Matlab Simulink, and DSPACE HIL Bench.</p> <p>The candidate shall be autonomous, rigorous with a strong team spirit.</p> <p>English speaking is required.</p>
Expected Skills/knowledge	<ul style="list-style-type: none"> <li>• Matlab/Simulink</li> <li>• Power electronics transistors</li> <li>• Functional Safety</li> <li>• Advanced algorithm control for power inverter</li> <li>• Critical real-time embedded software on ARM processor</li> <li>• General knowledge of microcontroller development</li> <li>• Requirement analysis and specification writing</li> <li>• Quality management skills</li> </ul>
Remuneration	<p>From 1400€/month + Lunch tickets + 50% of public transport</p>