






Summary Performance analysis, firmware architecture and embedded algorithms for ultra-low power systems with sensors.

Experience

- | | | |
|--------------------|---|---|
| <p>2019 – now</p> | <p>Sensors and Algorithm Engineer – <u>Apple Inc.</u>
5500 W Jefferson Blvd, 90016 Los Angeles</p> <ul style="list-style-type: none">• Sensor performance analysis, coordination with EE and PD teams to improve sensor placement, layout and product design• Coordination with factories to specify and validate DFM (design for manufacturing)• Feasibility studies for future projects | <p>09/08/2019 – now
Full Time</p>  |
| <p>2018 – 2019</p> | <p>Embedded Software Engineer – <u>Simplehuman LLC</u>
19850 Magellan Dr, 90502 Torrance</p> <p>Development of the new Sensor mirror hi-fi, smart mirror with Voice Assistant:</p> <ul style="list-style-type: none">• Low level drivers for sensors and lighting system• Application level OTA update – dual bank method on Cortex M0• Analysis and firmware development to handle ESD event• Math modelling of the new TRU-LUX lighting system, using mixing LEDs technology | <p>12/12/2018 – 09/06/2019
Full Time</p>  |
| <p>2016 - 2018</p> | <p>Team Lead - Embedded Software Engineer - <u>Game Your Game, Inc.</u>
653 Bryant St, 94107 San Francisco</p> <p>Connected device for golf players: new generation product development (GAMEGOLF PRO). Project management and technical development of a low power embedded system to put on a golf club.</p> <p style="text-align: center;">Project management</p> <ul style="list-style-type: none">• Team Lead since the Alpha phase our latest product (May 2018). Team of 10.• Coordinating a distributed team in California, Ireland, and Ukraine, prioritizing tasks according to our launch roadmap, working with each member on task decomposition, regular feedback, and documentation.• Higher level coordination with Management for product launch, popularization of technical concepts for Executives and Investors, improvement of the bond between Business, Product, and Engineering. <p style="text-align: center;">Technical development</p> <ul style="list-style-type: none">• Firmware architecture design and development for low power CPU (Cortex-M4, Cortex-M0)• Real-time algorithms on board (swing detection, activity & power related algorithms)<ul style="list-style-type: none">◦ On-the-fly sensor calibration on board (Magnetometer, Accelerometer, and Gyroscope)◦ Embedded Sensor Fusion for real-time orientation estimation (6 and 9 axis)◦ General motion analysis for sport application, and design of Golf specific models (MatLab)◦ Provis. US Patent on motion detection models and motion analysis◦ Provis. US Patent on low power management algorithm (always-on embedded system powered by a coin cell battery)• Machine Learning on the back-end (Genetic Algorithm in C/Python)<ul style="list-style-type: none">◦ Framework for data collection and algorithm testing◦ Genetic Algorithm for swing detection, classifiers compatible with our embedded system◦ Feature propagation to the embedded system through a config file transferred over BLE | <p>05/02/2016 – 12/11/2018
Full Time</p>  |
| <p>2014 - 2016</p> | <p>Entrepreneurship - Sensor network for sport industry – <u>SportSense</u>
405 chemin des Moyennes Bréguières, 06600 Antibes, France</p> | <p>09/01/2014 – 04/27/2016
Part-Time</p> |

Sensor network for Gymnastics National Training Center

- Full conception of hardware, firmware and software
- ToF sensors (ultra-sound and laser) integration
- PCB design, Micro-control, Data analysis, Bluetooth, Embedded Linux process, User interface

Entrepreneurship Award – by the Foundation of the University of Nice (10/2015)



2014 - 2015

Firmware developer - Professional Seismometer design - CNRS GeoAzur

250 rue Albert Einstein, 06905 Sophia Antipolis

12/01/2014 – 06/29/2015
Part-Time

End-to-end project management: Python digital signal processing and data analysis, user interface to display real-time graphs, backend management for long term data storage (SEED compliant)



Education

2011 - 2016

University of Nice Sophia Antipolis, France

Master of Sciences in Electrical Engineering

Embedded Systems

Graduated: 09/2016



2014 - 2015

University of Nice Sophia Antipolis, France

Certificate of Small Business Management & Entrepreneurship

Graduated: 09/2015



Skills and Tools

Engineering

Programming: C, Python, Php, Javascript, SQL, MatLab, C++, Java

Software: Eclipse IDE & variants, Keil μ Vision5, Matlab, Jupyter IPython, Intel CoFluent Studio, Git, Jira, Asana

Hardware: CortexM4, CortexM0, NXP and STM sensors, NXP BLE stack

Communication

Language: English – French

Miscellaneous

2019

Provis. US Patent – AN 62/778,654 – Jan 2019

Electronic tag for shot detection

2016

Provis. US Patent – AN 62/557,225 – Nov 2016

Motion and gesture analysis from a Magnetic and Inertial Measurement Unit

2015

Entrepreneurship Award – University of Nice Sophia Antipolis Foundation – Oct 2015

Student Startup Contest

2015

Junior Project Award – STMicroelectronics – Nov 2015

E-Same Contest

2009 - 2015

Elite Athlete: French Olympic Team - Trampoline

Portfolio:

www.mrenault.com