Davide Lorenzo Asnaghi | M.Eng.

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Experience

Apple, Inc. **New York, USA**
Embedded controls engineer - Special Projects Group *Mar 2021 – Present*
- Research and development for embedded control applications.

Butterfly Network **New York, USA**
Embedded engineer - C/C++ development for a portable ultrasound device *Aug 2019 – Mar 2021*
- Designed and implemented a robust, RAM to EEPROM based, field update process for the bootloader on a Cypress FX3.
- Wrote proprietary, size-constrained drivers in C and C++ for inertial measurement units (IMU) such as ICM20948 and MPU9250

Eko Devices **Berkeley, USA**
Embedded engineering intern - R&D for a new product line of Bluetooth smart stethoscopes *Mar 2019 – Aug 2019*
- Responsible for the firmware development of Eko's new smart stethoscope model, based on the Cypress PSoC6 BLE microcontroller.
- Implemented Bluetooth Low Energy (BLE) Over-The-Air (OTA) updates and physiological Digital Signal Processing (DSP) features.

Berkeley Emergent Space Tensegrities Lab. **Berkeley, USA**
Graduate student researcher - embedded electronics for physiological data acquisition *Aug 2018 – Mar 2019*
- Lead designer of sensors for physiological data collection, focused on the integration of hardware, firmware, and validation studies.
- Created a customized MicroPython firmware on STM32 to allow easy modification of the core parameters by the rest of the team.

DJI **Hong Kong, HK**
Robotics Institute firmware engineering intern - CAN bus communication and sensor fusion *Sep 2017 – Jun 2018*
- Developed a modular C library for the control system of four motors robotic platforms, to be deployed in drones and ground robots.
- Designed a sensor-fusion based distance measurement system, using a Kalman filter with time of flight and infrared sensors.

Education

University of California, Berkeley **Berkeley, USA**
Master of Engineering, Biomedical engineering, GPA: 3.88 *2018 – 2019*
- Graduate researcher at BEST Lab: embedded firmware development for physiological data acquisition and processing (ECG, EMG)

The Hong Kong University of Science and Technology (HKUST) **Hong Kong, HK**
Bachelor of Engineering, Electronic Engineering, Exchange Student, GPA: 3.85 *2017 – 2018*
- Undergraduate researcher at HKUST Robotics institute: embedded engineering for robotics systems, CAN bus communication

Politecnico di Milano **Milan, IT**
Bachelor of Science, Biomedical Engineering, GPA: 109/110 (3.96) *2015 – 2017*
- Undergraduate research associate at NECST Lab: FPGA design applied to biomedical science, hardware accelerated image processing

Publications

The Sparthan Three-Dimensional Printed Exo-Glove: A Preliminary Evaluation of Performance **Berkeley, USA**
Authors: Georgieu TA, Asnaghi D, Liang A, Agogino AM, ASME - Journal of Medical Devices *2020*

Mechatronics enabling kit for 3D printed hand prostheses **Delft, NL**
Authors: Wong TH, Asnaghi D, Leung W, International Conference on Engineering Design *2019*

Projects

Embedded firmware: *'Project Sparthan: Open source prosthetics development kit'* *Jan 2018 - Current*
- Sparthan aims to provide children with responsive, low-cost, 3D printed prosthetic hands controlled by muscles' signals (EMG).
- Created schematics and board layout for custom printed circuit board (PCB) in Altium Designer to reduce the device's footprint.
- Developed a feed-forward neural network architecture in C++ running on STM32 micro-controller for hand gesture classification.

Embedded machine learning: *'An automatic ML-based characterization of lung cancer from PET and CT'* *Aug 2018 - Oct 2018*
- Development of an advanced medical imaging analysis pipeline in collaboration with NECST Lab and Humanitas hospital in Milan.
- Designed an embedded machine learning approach using hardware accelerated classification on FPGA platform.
- Presented results and our python based prototyping framework as a keynote speaker at the Xilinx Design Forum in San Jose (CA).

Skills

Programming: C, C++, Rust, Python, Javascript (React), Matlab, Arduino, TeX, Verilog, VHDL, git
Languages: Italian (Native), English (Fluent: TOEFL 117/120), Chinese Mandarin (Basic proficiency, HSK I 192/200)