# Paul **Sammut**


Senior Robotics Engineer

*San Francisco, CA*

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## Summary


Paul is a robotics engineer that has worked on robotic perception systems for micromobility scooters, designed electro-mechanical subsystems for underwater rockets, has designed and manufactured hardware and started a robotics company. He was born with a passion for anything with hardware, software, and moving parts and has over a decade of experience building combinations of those 3 things.


## Education

**Stevens Institute of Technology** — *Hoboken, NJ*

Bachelor of Engineering in Mechanical Engineering (Aerospace Concentration) — *May. 2009*

**Stevens Institute of Technology** — *Hoboken, NJ*

Master of Engineering in Mechanical Engineering (Robotics Concentration) — *May. 2014*

## Work Experience

**Uber** — *San Francisco, CA*

Senior Mechatronics Engineer - NeMo Robotics — *August 2019 - Present*

- Oversaw a JDM project with a Taiwanese hardware CRM to produce an Android based 360 degree camera system mounted on a micromobility scooter. Provided QA on design and handled hardware/mechanical change requests.
- Designed mechanical IP68 environmental sealing system with 3 discreet electronics enclosure chambers and 6 electrical passthroughs.
- Created an assembly cell to facilitate final assembly of hardware units with overhead torque controlled fastener drivers and automated labeling and barcode scan based asset/QA tracking.
- Designed in CAD assembly fixtures for fabrication and assembly operations of scooters.
- Designed a 5 discreet antenna solution for Wifi MIMO, GPS, LTE MIMO that was housed in a micromobility scooter and requested custom antenna post processing from Taoglas for environmental protection.
- Identified the need for a hardware tracking database and created an Airtable Base along with a suite of client side software in python and LabVIEW that automatically tracked production gates, firmware/software updates, QA inspections and updated Airtable via REST API.
- Specified a power and digital comms interface PCB to serve as an electrical bridge between vehicle and camera. Wrote all firmware in C for the MCU.
- Designed a cellular modem solution for a high speed Cat-4 LTE connection on a micromobility vehicle with simplified compliance, time-to-market, and speed as primary design criteria.
- Successfully served as interim team EM of a 5 person mechatronics group during month-long absence of EM.

**Ouster Inc.** — *San Francisco, CA*

Software Engineer - LiDAR Sensors and Deployments — *June 2019 - August 2019*

- Worked on FleetGuide, a LiDAR based sensor suite for trucks to provide drivers with better spatial awereness.
- Solved design issues with deployed sensor systems on fleets of trucks, ranging from water ingress to creating fault handling/reaction systems on ruggedized truck mounted Linux boxes.
- Wrote automated provisioning and test code for fleet of ruggedized Linux based LiDAR systems mounted to garbage trucks.
- Conducted data analysis for basic fleet health monitoring using the ELK stack, Big Query and Tableou.

**Stocker Freight** — *New York, NY*

Founder — *2017 - 2018*

- Raised seed round and founded Stocker, dedicated to creating an autonomous freight service for cities.
- Built a tech-demo street robot name Primo using ROS capable of operating autonomously in the street.
- Integrated RTAB-Map appearance based SLAM to create PCL maps and localize within them. Click link.
- Wrote ROS code integrating multiple stereo cams, mono cams, IMU and other sensors to provide odometry fused with an EKF.
- Created a simulation environment with fully defined URDF and custom sim nodes for HIL and SIL testing in Gazebo

**Robotics Consulting | Rockefeller University** *New York, NY*

Robotics Engineer *2016 - 2017*

- Acquired, managed and executed a robotics contract to create an autonomous catamaran for dolphin vocalization research.
- Integrated IMU, GPS, Cameras, Motor Controllers, Long Range RF Telemetry and Control, LiFePo4 Battery System, and wrote Mission Control software for autonomous operation.
- Created a publisher-subscribers software framework using the Actor Framework allowing for node-like processes.

**Ramos Alarm Clock | Sammut Tech LLC** *Hoboken, NJ*

Founder *2012 - 2016*

- Invented a novel alarm clock that forced users up by use of a remote keypad.
- Created a successful Kickstarter and pre-order campaign raising $200K in pre-orders.
- Setup a factory in New Jersey, managed 2 engineers and labor hires to manufacture product.
- Managed capital acquisitions, supply chain, manufacturing plans, inventory forecast schedules, and product strategy.

**Davidson Lab | Stevens Institute of Technology** *Hoboken, NJ*

Senior Research Engineer *2009 - May 2019*

- Managed new technology projects from the specification phase to testing and validation.
- Conducted fundamental physics research on High Speed Supercavitating Vehicles (underwater rockets).
- Designed many hundreds of mechanical parts and assemblies in CAD for fabrication utilizing numerous materials, in complex tolerence stackups in electromechcanical and pneumatic and subsea applications.
- Created instrumentation and control apparatus utilizing various sensors, pneumatic systems, still and video photography systems interfaced to separate RTOS and standard computers on a custom distributed network.
- Operated, maintained, and upgraded a fleet of UUVs operating in the Hudson River.
- Created HIL testing apparatus utilizing mathematical models to validate system performance.
- Designed electronic wiring systems for power, analog and digital comms and connector solutions.
- Wrote and supported mission critical launch control software for rocket systems.
- Designed and managed the creation of a rocket control surface subsystem with humming bird level dynamic response.

**Institute Machine Shop | Stevens Institute of Technology** *Hoboken, NJ*

Machine Shop Apprentice *2007 - 2009*

- Machined parts based on provided drawings and learned fundamental concepts of Design For Manufacture

## Publications

2012 **Planing-Hull Forces and Moments on a Cylindrical Body in a Cavity**, CAV2012 *Singapore*

2010 **Remote Control and Monitoring of MOOS Vehicles through Cellular Modems**, MIT MOOS-DAWG *Cambridge, MA*

2010 **Guidance of a UUV Using a Passive Acoustic Threat Detection System**, IEEE, WSS *Carrara, Italy*

## Skills

**Software** C, C++, Python, ROS, OpenCV, PCL2, Real Time Programming, Linux, CMake, Vim Enthusiast, VCS (Git, SVN), Airtable, Mixed Signal DAQ Programming, LabVIEW, LabVIEW RT, LabVIEW FPGA, cRIO

**Hardware** PCB Layout (Altium, Eagle), MPLAB IDE, Logic Analyzers, ICE Debuggers, Digital-comms (CAN, Serial, $I^2C$, SPI), RF SoCs, uProcs, Power Circuits, Sensors (LiDARs, GNSS, IMUs, AHRS, 2D Cameras, Stereo Cameras, RGBD Cameras), HIL Testing

**Mechanical** Solidworks (since 2003), Finite Element Analysis (FEA), Thermal analysis, Fusion 360, Complex Tolerance Stacks, Underwater Systems, Precision Actuation Design (Ballscrews, Linear Rails), Materials and Coatings

**Personal** Previous US Security Clearance, USA and Maltese Citizen, Avid Rockclimber