Lucas Álvarez Garrido

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Education

Pontificia Universidad Católica de Chile — Santiago, Chile
Bachelor of Engineering, Major in Electrical Engineering, Minor in Automation and Robotics — *Expected July 2020*

Relevant Coursework: Control Systems, Electronics, Electric Machines, Embedded Systems, Image Processing, Pattern Recognition, Robotic Sensors and Actuators, Optimal Control, Social Entrepreneurship.

Experience

Inria — Grenoble, France
Research Internship — *Jan 2020 - Mar 2020*

- **Modelling of non-equilibrium molecular flexibility at atomic scale**: Research internship dedicated to extending near-equilibrium normal mode analysis of macromolecules (mainly proteins) to include non-equilibrium cases. Implemented Trust Region Subproblem methods in C++ to solve quadratic minimization problems with linear terms in the objective function.

Zippedi — Santiago, Chile
Software Development (Freelance) — *Mar 2019 - Apr 2019*

- **Sonoff control software**: Developed software to directly control Sonoff IoT relays without firmware modification. The software was deployed to multiple locations by the company to control their robot enclosures automatically.

Pontificia Universidad Católica de Chile — Santiago, Chile
Research Assistant — *Mar 2017 - Jul 2017*

- **Newtonian telescope inverse kinematics model for gravity compensation**: Research assistant for Dr. C.D. Guzman. Developed a neural network based inverse kinematics model for the mount of a primary mirror in a Newtonian telescope to compensate for disturbances in alignment due to gravity. The software was deployed using C and Python. This concept is currently being patented.

Seguel Robotics — Santiago, Chile
Software Development (Freelance) — *Jul 2016 - Dec 2016*

- **Bugster**: Developed software and firmware for an IoT robotics platform based on the ESP8266. Modified the BlocklyDuino library to program the robot with block-based programming.

Lycée Antoine de Saint-Exupéry — Santiago, Chile
Robotics Mentor — *May 2016 - Dec 2017*

- **VEX Robotics Competition Mentor**: Co-founded and led the school's VEX Robotics Competition team (#1522K) for high school students.

Pontificia Universidad Católica de Chile — Santiago, Chile
Teaching Assistant — *Mar 2016 - Jul 2018*

- **TA**: Teaching assistant for the following courses: Introduction to Programming (3 times), Fundamentals of Robotics, Introduction to Electrical Engineering (2 times), Visual Thinking, Introduction to Astronautics, Optimization.

Visual Progress — Santiago, Chile
Software Development (Freelance) — *May 2015 - Jun 2015*

- **Face Tracking**: Developed software for face tracking using OpenCV on the Raspberry Pi 2. Software was later integrated into the control of a simple robotic arm.

Skills

- **Programming Languages (Advanced)**: Python, Java
- **Programming Languages**: C/C++, Matlab, Javascript, HTML, CSS
- **Languages**: Spanish (Native), English (Fluent, CAE Score: 89%)

Software: Git, Linux, LaTeX, Autodesk Inventor
Libraries: OpenCV, Scikit-Learn, Numpy, Matplotlib

Projects

- **Aerospace UC**: Member of electrical and telemetry subteam of Aerospace UC, a student-led club dedicated to rocketry (2019 - Present).
- **La Resistencia UC**: Member of university's maker club. Worked on a hexapod robot made from 3D printed parts (2016 - Present).
- **FIRST Robotics Competition**:
  - *Los Chilis* #6955: Co-founder and lead engineering mentor of team *Los Chilis* (2017 - Present). Worked alongside high school students to develop tools such as web interfaces and code architectures. The team has received multiple awards during competition. Taught robotics workshops for primary school students and teachers.
  - *Corazón de Chileno* #2576: Student captain of programming and awards subteams of team *Corazón de Chileno* (2013 - 2015). Developed vision tracking software and deployed on the NVIDIA Jetson TK1 platform (2015).
- **VEX Robotics Competition**: Student member of team #2576A (2014-2015) and mentor of team #1522K, *Voltech* (2016-2017).