Joakin Ugalde

Contact Info

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Education

Universidad de Chile

2016 Ingeniería Civil Mecánica

2015 B. SC in Mechanical Engineering

Employment History

2022-until present **Professor - Department of Mechanical Engineering, Universidad de Chile** Teacher of "Robotics Manipulator", a co-created elective course for undegraduates.

2018-until present **Fablab staff - Fablab U de Chile** Develop machines and devices, create courses to teach digital fabrication, machine maintenance, provide technical assistance in mechanics and mechatronics to students, academics and entrepreneurs in their hardware projects.

2021-2022 **Hardware developer - Solsticio SPA** Design and build mechanical hardware for a robotic cell and an automated fabrication line that generates wood planks using orientated chips and glue, for Strong By Form enterprise.

2016 - 2017 **Research assistant - Department of Mechanical Engineering, Universidad de Chile** Lab manager, researching about modular soft robotics in the project "Replicating the Morphogenetic Movements of the Embryo", financed by the ONR (Office of Naval Research) . T.A in different robotics and digital fabrication courses for undegraduates.

Research Publications

Journal Articles

1. Calderón, A. A., Ugalde, J. C., Chang, L., Zagal, J. C., & Pérez-Arancibia, N. O. (2019). An earthworm-inspired soft robot with perceptive artificial skin. *Bioinspiration & Biomimetics*, *14*(5), 056012. https://doi.org/10.1088/1748-3190/ab1440

Conference Proceedings

1. Mattamala, M., Olave, G., Campusano, M., Gómez, C., Martínez, L., Estefó, P., Ugalde, J., Urrutia, J., San Martín, F., Zúñiga, P., Carrasco, J., Villar, C., & González, R. (2017). Aprendizaje interdisciplinario en robótica: La innovadora experiencia de duckietown chile, In *Xxx congreso sochedi 2017*.
2. Calderón, A. A., Ugalde, J. C., Zagal, J. C., & Pérez-Arancibia, N. O. (2016). Design, fabrication and control of a multi-material-multi-actuator soft robot inspired by burrowing worms, In *2016 ieee international conference on robotics and biomimetics (robio)*.

Awards
ROBIO 2016 Best Paper Finalist Award IEEE Conference on Robotics and Biomimetics, Qingdao, China, 2016.

Technical Skills

CAD	Autodesk Inventor, Autodesk Fusion 360, SolidWorks, AutoCAD
Manufacturing	Turning, Milling, CNC machining, 3D printing (SLA, FDM), silicone mold making for casting.
Electronics	Experience with Arduino, Arduino modules, Eagle, basic circuit design, sensor modules and a variety of actuators and drivers
Programming	Python, Java, C++, Arduino
Pneumatics	Experience designing low pressure pneumatic circuits with valves, compressors, actuators and other minor components.

Other skills

Languages	Spanish, English.
Software	Inkscape, Autodesk NetFabb, Matlab, Latex.

Teaching Experience

Universidad de Chile

Instructor

- Co-designed and taught *Robotics Manipulators* at the mechanical engineering department of the University of Chile.

- Co-designed and taught *Robotics and automation workshop* at the Canadian Centre for Joining and Welding (CCWJ), University of Alberta. (2017)

- Co-designed and taught *Developing a SumoBot* for high school students at the Fablab Universidad de Chile. (2016)

- Co-designed and taught a variety of digital fabrication workshops to engineering students within the *BRC: Beauchef robotics Challenge*, so they could build their own line follower robot. (2018, 2019)

Teaching Experience (continued)

Teaching assistant, 2014-2022

I assisted the courses:

- ME4030 Design and innovation seminar
- ME4705 Digital Fabrication
- ME3001 Digital Fabrication of technological products
- EI2001 Developing soft robots
- EI2001 Constructing kinetic sculptures
- (Co-designed) EI2001 Duckietown: Developing autonomous vehicles
- ME5601: Design of mechanical systems

Other Experience

Universidad de Chile

Hardware developer, 2020

I designed and built a mechanical ventilator **(BAMBU)** with a team of engineers and industrial designers at the engineering faculty, during the first wave of the COVID-19 pandemic. My job was to design the piping and co-design and manufacture the actuation mechanism.

Community co-founder, 2016

With a group of friends we founded the Robotics Community of the university, our goal is to encourage students to get into the field through curricular and extracurricular activities, such as competitions and the courses described previously.

References

Supervisors

Danisa Peric, Executive Director at Fablab U de Chile
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Juan Cristobal Zagal, Associated Professor at Universidad de Chile
jczagal@ing.uchile.cl
Rubén Fernández, Assistant Professor at Universidad de Chile
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Portfolio

At personal website: https://jkugalde.github.io/portfolio