

Francisco Hernández | CV

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Summary

Autodidact and passionate about science, arts and interaction design. With a strong background in physics and computer science, my goal is to further research in data analysis & visualization, automated analysis and sensing devices. I look forward to create new software and devices that will improve people's life quality.

Education

- **Pontifical Catholic University of Chile** **Santiago, Chile**
Licentiate (Bachelor) degree in Physics *January 2017*
Thesis: "Preliminary studies of exploding wires in a Plasma Focus"
- **Pontifical Catholic University of Chile** **Santiago, Chile**
Master's degree in Physics *Estimated: July 2020*
Thesis: "Development of Particle-in-Cell code using the Implicit Moment Method and Monte-Carlo collisions for laboratory plasma simulation"

Academic experience

Research, Teaching.....

- **Research Assistant in Plasma Laboratory** **Santiago, Chile**
Pontifical Catholic University of Chile *April 2014 - present*
Among the tasks performed is the creation of electronics to control pulsed-power experiments, obtaining & analyzing spectra of plasma emission and realizing various optics diagnostics.
Also, these practices were realized at the Institute of Physics:
 - Winter practice: "Optical diagnostics in dense transient plasmas" - July 2014
 - Summer practice: "Transient atmospheric plasmas with applications in industry and medicine" - January 2015
- **Assistantship at Laboratory and Tutor** **Santiago, Chile**
Pontifical Catholic University of Chile *March 2015 - November 2019*
Assistantship at Laboratory, Institute of Physics: "Physics for science" (FIS109), "Thermodynamics" (FIS152), "Electricity and Magnetism" (FIS0153) and "Electronics for Physicists" (FIZ3300).
Tutor, Institute of Physics: "Introduction to Programming" (IIC1103) - 2015
- **Science communicator** **Santiago, Chile**
Pontifical Catholic University of Chile *March 2015 - November 2016*
Worked in several science, technology, and university fairs.

Awards.....

- **Undergraduate Research Fund** **Santiago, Chile**
Pontifical Catholic University of Chile *Winter 2014 and Summer 2015*
Two different awards for paid internships. Research done about "Optical diagnostics in Dense Transient Plasmas" (Winter 2014) and "Atmospheric plasmas" (Summer 2015)

Participation in projects or research programs.....

- **Monolith Controversies** **Santiago, Chile**
National Council of Culture and the Arts (Chile) *November 2013 - July 2014*
Chilean Pavilion at the 14th Venice Architecture Biennale. Developed a system for audiovisual media for the pavilion.
The Chilean Pavilion was awarded with the Silver Lion,

Achievements.....

- **Winner at BRAIN (Business, Research, Acceleration and Innovation) Chile.**
Khapto was one of the 10 awarded startups between 325 scientific & technology projects. August, 2016. Santiago, Chile.
- **International Olympiad in Informatics (IOI) contestant.**
Selected to represent Chile at the IOI in 2008 (El Cairo, Egypt) and 2009 (Plovdiv, Bulgaria).
- **1st Place in VI IEEE Chilean Robotics Competition in Open Category**
November, 2007. Monterrey, Mexico.
- **1st Place in VI IEEE Chilean Robotics Competition in Open Category**
October, 2007. Santiago, Chile.

Skills

- **Programming languages, syntaxes and/or libraries:** C/C++, Python, Matlab, Arduino, HTML, Javascript, ES6, SQL, MySQL, PHP, L^AT_EX, openFrameworks, LibCinder, React Native, CUDA, OpenCV, scikit-learn.
- **Software:** Visual Studio, Matlab, Origin (OriginLab), Xcode, LTspice, Microsoft Office, Rhinoceros 3D, Adobe Photoshop, Adobe Illustrator, Git, Eagle.
- **Technical skills:** 3D printing, CNC fabrication, PCBA design and fabrication, mathematical modeling.
- **Languages:** Advanced English (IELTS: 7), Native Spanish.

Work experience

- **Map developer** **Santiago, Chile**
United Nations Economic Commission for Latin America and the Caribbean *2020*
Development of a web geographic data viewer, including 4 types of data: segregation, mobility, migrations and general indicators. The work included geographic data processing, classification and visualization.
- **Map and data visualization developer** **Stockholm, Sweden (Remote work)**
ArkDes *2019*
Development of a interactive world map with the history of prefabricated panels for the "Flying Panels" exhibition. A second interactive app was developed where users can select a building design to see a 3D visualization.
- **CTO** **Santiago, Chile**
Khapto *May 2016 - present*
Startup which objective is to improve the way physiotherapy is realized. Through the use of different sensors in a wearable device, we provide the professional with a series of critical data that allow a more effective improvement of the patient. This, in a larger scale, will allow massive studies about injuries and treatments.

- Programming and mathematics consultant** **Santiago, Chile**
 ○ *Dirección de Extensión y Servicios Externos (DESE)* *July 2017 - August 2017*
Facultad de Arquitectura, Diseño y Estudios Urbanos UC
 Advice on the development of software that automatically generates, through Monte-Carlo simulations, the average price of different types of buildings. The software was developed for the Internal Revenue Service of Chile.
- Hardware and software developer** **Santiago, Chile**
 ○ *Freelancer* *2015*
 Design and development of a remote water level system for irrigation channel. An ultra-sensitive capacitive sensor was developed and through GSM the data was sent to a web server in order to be visualized in a website.
- Interactive mobile app developer** **Santiago, Chile**
 ○ *Dirección de Extensión y Servicios Externos (DESE)* *March 2015 - August 2015*
Facultad de Arquitectura, Diseño y Estudios Urbanos UC
 Development of a solution for the National Monuments Council of Chile consisting in a hybrid mobile App to register properties and national monuments, with a web-based management capable of generate automated reports.
- Interactive Software developer** **Santiago, Chile**
 ○ *Guillermo Acuña Arquitectos Asociados* *September 2012 - April 2013*
 Design and development of an interactive software for an exhibition in the MAXXI museum, Rome.
 The project proposes to visualize data about the city of Santiago on which a project of optimization of energies is proposed. As part of the team I developed all the software, visualizations and data analysis.
- Interactive software & hardware developer and experience designer** **Santiago, Chile**
 ○ *Frankenstudio | Etnolab SpA* *2011–2012*
 Responsible of the development of software and hardware for several projects and designing of interactive experiences. Some of the works includes:
- Interactive video wall with body recognition
 - Educative game with on touch-screen
 - Interactive installation with natural interaction using hand recognition and 3D capture
 - Installation in museum on digital platforms
 - Interactive installation in public street with web interaction
 - Design and building of hardware
- Web developer** **Santiago, Chile**
 ○ *Freelancer* *2009–2011*
 Development of several websites and programming of an own CMS (Content Management System) to provide an easier management. Worked with PHP, MySQL, JS, HTML y CSS.

Projects

- Hip implant classifier** **Santiago, Chile**
 ○ *Project* *2017*
 Development of software for hip implant classification, using TensorFlow.
- Map scraper** **Santiago, Chile**
 ○ *Project* *2017*
 Web map scraper from a Web Map Server using OpenCV.