Alberto IsaacBarquín Murguía

M.Sc. in Space Science and Technology

Birth information
Mexico City
19/08/1989
Mexican

Address
Cerro Teoca 6
Campestre
Churubusco, 04200
Coyoacán, Mexico
City, Mexico

Tel
+52 55 5963 4637

Mail
betoman@gmail.com

Online
github.com/albertoibm

Tech Skills
- **Python** ★★★★★
- **Numpy** ★★★★★
- **CCS5** ★★★★☆
- **PUS** ★★★★☆
- **SQL** ★★★★☆
- **C/C++** ★★★★☆
- **MatLab** ★★★★★
- **TCL/TK** ★★★★★
- **Bash** ★★★★★
- **JavaScript** ★★★★☆
- **Java** ★★★★☆
- **HTML** ★★★★☆
- **Office** ★★★★★
- **Eclipse** ★★★★☆
- **Unix/Linux** ★★★★★
- **Windows** ★★★★★
- **SpaceWire** ★★☆☆☆
- **TCP/IP** ★★★★☆

Languages
- **Spanish** ★★★★★
- **English** ★★★★★
- **German** ★★★★☆
- **French** ★★★☆☆

Work Experience

05/2019 - 04/2020 **Manager** — Wanderlust Hostel, San Crisóbal de las Casas, Mexico
Took over as the hostel's manager, reverted a trend of losses and maintained constant profits throughout the rest of the year. Trained the new managing team. In charge of a team of 5 people.

03/2017 - 02/2019 **Software Development Engineer** — Airbus Defence and Space, Friedrichshafen, Germany
Development and maintenance of software supporting the Electrical Assembly Integration and Testing department, mainly a library for command and control of the spacecraft; development of custom tools for the Flight Operations department that translate the Operations Procedures XML (MOIS) code into TCL for CCS5; development of the in-house simulation framework infrastructure used during the assembly of the satellites, simulating hardware in-the-loop; development and verification of drivers for electrical interfaces between the real on-board computer and the simulated hardware. Languages used for the various projects: TCL, Python, C++, Java.

10/2017 - 04/2020 **Entrepreneur** — Wanderlust Hostel, San Crisóbal de las Casas, Mexico
Main investor and designer

03/2016 - 09/2016 **Master's Thesis** — Airbus Defence and Space, Friedrichshafen, Germany
Worked on the Future Low-cost Platform under Prof. Jens Eickhoff. Tasks included: development of a simulated payload in C++ and successfully connect it to hardware in the loop via SpaceWire and RMAP protocols; set up a simulation of the dynamics of the satellite in orbit to compare against the orbit propagated internally in the simulated on-board computer.

08/2013 - 04/2014 **Software Developer** — Lab CDMX, Mexico City, Mexico
Software developer for the project Code for Mexico City. Worked in opening data from several government institutions and make it available to the public. Developed the site http://www.verificalo.mx which helps car users in Mexico City fulfill their obligations. Python and Bash used for data analysis, JavaScript for data visualization and Ruby on Rails for web development.

08/2012 - 01/2013 **Social Service** — National Autonomous University of Mexico, Mexico City, Mexico
480 hours at the Centre for Technology Innovation and Mechanical Design. Development of a GUI for a commercial quadrocopter AR.Drone with Python and PyGame. Development of several simulations of dynamic systems to use as pedagogic examples with MatLab/Simulink

08/2012 - 02/2013 **Computer Technician** — Deportes Martí, Mexico City, Mexico
Part time

11/2006 - 01/2007 **Internship** — National Oil Company , Mexico City, Mexico
240 Hours at the Technical Assistance department

Volunteer
+General repairs in school house at Skolgarden, Skinnskatteberg, Sweden (07/2015 - 08/20)
+Hostel Fabrizzio's Terrace, Barcelona, Spain (06/2015 - 07/2015)
+Planted crops and took care of animals at Liedtke Farm, Leipzig, Germany (04/2013 - 06/2013)

Education

10/2014 - 09/2016 **Double Masters Degree in Space Science and Technology** Luleå Technical University, Sweden
Université Toulouse III, France
Major in Space Techniques and Instrumentation.
Main subjects: Space Dynamics, Space Physics, Spacecraft Systems Design, Electronics in Space, Earth Observation, Optical and Radar-based Observations, Image Processing, Space Environment Interactions.
Project of interest: construction of a FloatSat where I modelled the dynamics and tuned the PID controller.
Thesis: SmallSat Payload Simulation for On-board-Software Verification.
Supervisors: Dr. Jens Eickhoff, Dr. Peter von Ballmoos

08/2007 - 06/2012 **Mechatronics Engineer** National Autonomous University of Mexico, Mexico City, Mexico
Subjects of interest: Automatic Control, Advanced Control, Non-linear Control, Neural Networks, Industrial Automation, Artificial Intelligence.
Thesis: Implementation of a robust controller in a commercial quadrocopter.
Developed custom software in C++ in order to implement a robust controller and observer using sliding modes control theory for a commercial quadrocopter AR.Drone. MatLab/Simulink used for simulation of the flight dynamics and Python with OpenGL for visualization.
Supervisors: Dr. Edmundo Rocha Cózatl, Dr. Leonid Fridman.

Personal Projects

Midi Loop Machine. Connects to a MIDI device and is capable of recording and looping tracks. Written in Python.

Web-based identification of zones of interest in images with JavaScript. Intended for medical imagery.

Image processing and computer vision using Python, Matlab, and JavaScript: Image compression with uneven pixels, image generation with genetic algorithms, pattern recognition with neural networks, image improvement.

Home automation system using a custom made HTTP server that controls a house model, through a microcontroller. Written in Python and C++.

Interests

Optimization algorithms, image processing, literature, music, hiking, kayaking, photography, languages, drawing.

Alberto Isaac Barquin Murguia. October 2021