

# LUCAS HISSA

## Systems applied to Engineering and Management, M. Sc.

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## ABOUT ME

I am a Systems applied to Engineering and Management Master, a Information Systems Bachelor and an Informatics Technician. During my under-graduation course, I experienced developing a satellite tracking, automation, control and orchestration network software. Development of communication and message exchange structure, Tracking software and antennas control and orchestration. All those experiences were provided through my participation in the QB50 International Space Mission, research scholarships on IFF. During my graduation course, I experienced developing a remote calibration interface communication over CAN network for an embedded system in commercial hardware to control, monitor and instrument industrial internal combustion engines Otto-Cycle. Also developing an integrated and low-cost solution composed by a network of terrestrial and aerial sensors for the monitoring of water bodies over an ESP32 MCU. All those experiences were provided through my participation in the EMBRAPII Program internship on IFF's Innovation Hub. In parallel to this I focused my dissertation on the study of embedded systems, specifically on RTOS. Resulting in the publish of a book chapter about it.

## MY EXPERIENCE

### • Aerospace Knowledge in Nano-Satellites

Development of a TLE propagation system for satellite tracking. Python (backend computations) and C# (desktop frontend) were used.

### • UAV Virtual Panel

Development of a custom communication protocol for message exchange via RF for a quad-copter telemetry software. Python was used in the whole project alongside with PyGame for the frontend.

### • Brazilian Network for Satellite Tracking (RIBRAS)

Development of a Satellite tracking, automation, control and orchestration network software. Including the communication and message exchange structure (sockets / Python), the Tracking software (json / Python) and the antennas control and orchestration (C / Python), all of that covered by automated tests in Python.

### • Development of Otto-Cycle Stationary Engine Device Prototype

Development of embedded system in commercial hardware to control, monitor and instrument industrial internal combustion engines Otto-Cycle. Development of remote calibration interface: Desktop (C# / .NET) and Mobile (Java / Kotlin) communication over CAN network and MQTT protocol.

### • Multi-Sensory and Multi-Dimensional Water Body Monitoring (M3H)

Development of an integrated and low-cost solution composed by a network of terrestrial (micro seismic) and aerial (UAV) sensors for the monitoring of water bodies, especially mineral tailing dams over an ESP32 using micropython and wireless technologies.

## EDUCATION

Systems applied to Engineering and Management Graduate, M.Sc.

IFF Campos Campus Centro

2016 - 2018

• GPA: 8.7

Information Systems Undergraduate

IFF Campos Campus Centro

2010 - 2015

• GPA: 8.87

Informatics Technician

IFF Campos Campus Centro

2008 - 2010

• GPA: 9.51

## LANGUAGES

Portuguese



English



German



Spanish



## PROGRAMMING LANGUAGES

C

C#

Python

Micropython

Java

JS/TS

HTML

Angular

Kotlin

Swift

Dart

## PROFESSIONAL EXPERIENCE

Embedded and Mobile Systems Software Developer

Innovation Hub IFF/EMBRAPII

2017 - May 2020

• Intern in the project: Development of Otto-Cycle Stationary Engine Device Prototype

## RESEARCH CAREER

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IFF Scholarship/CAPES internship- 2009 - 2018

EMBRAPII Program internship on IFF's Innovation Hub - 2017 - 2020

## PROFESSIONAL CAREER

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CAPES internship - 2018

- ESP32 / Micropython

Eneltec - 2020

- Blockchain integration / Javascript / json
- Automotive data telemetry iOS/Android app (Flutter)
- OBD2 / Bluetooth communication (BLE)
- REST API / MongoDB integration
- React / Native Web page and Mobile App

LRGE Systems - 2022

- TS/JS Angular Video conference System for Web and Electron on Raspberry Pi

Spread Tecnologia - 2022-2024

- TS/JS/Ember Remote security access control system

## TECHNICAL WORKS

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Extension Projects

📍 IFF Campos Campus Centro

- Aerospace Knowledge in Nano-Satellites/. 2011
- UAV Virtual Panel. 2012-2013.

QB50 International Space Mission

📍 Center for Embedded and Aerospace Systems/Innovation Hub/IFF

- Development of communication and message exchange structure for the Brazilian Network for Satellite Tracking (RIBRAS) project. 2013.
- Development of a tracking, automation, control and orchestration network software for RIBRAS. 2013 - 2015.
- Development of antennas control and orchestration for the Brazilian Network for RIBRAS. 2014 - 2015.

## SKILLS AND KNOWLEDGE

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Knowledge acquired on Academical and Professional Career

- Visual Studio (C#)/ Code Composer Studio (C).
- Mobile (Java/Kotlin/Swift/Dart/React Native).
- Web (JS/TS/Angular/React/Ember)
- CI / CD / DevOps
- Python/PyGame/PyQt/MicroPython.
- RTOS.
- Git, Kanban, TDD and agile development.
- Remote Access (SSH/ VNC/ VPN).
- CAN Networks/J1939 Protocol/ModBus Protocol.

## COMPLEMENTARY EXPERIENCE

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Researcher

- Visiting Researcher at Tekever - Tecnologias de Informação S.A., in activities related to the development of the 14BiSat satellite (Credit Hours: 100h)

Events Workshops and Presentations

- GamaSat Communications payload, 4th European CubeSat Symposium, Royal Military Academy / von Karman Institute, Brussels, Belgium, 2012.
- A review on the application of Real Time Operational Systems on Small Satellites, 1st International Academy of Astronautics Latin American Symposium on Small Satellites Colomb Institute. Buenos Aires, 2017.

Works in conferences

- 1st IAA Latin America CubeSat Workshop, UnB, Brasília, 2014.
- 6th European CubeSat Symposium, Estavayer- le-Lac, Switzerland, 2014.
- 8th European Cubesat Symposium, Imperial College / von Karman Institute, London, UK, 2016.
- Second IAA Latin American CubeSat Workshop, UFSC, Florianopolis, 2016.
- 1st International Academy of Astronautics Latin American Symposium on Small Satellites Colomb Institute. Buenos Aires, 2017.
- X Congresso Nacional de Engenharia Mecânica, Salvador, 2018.

Published Book Chapters

- HISSA, L. R.; CAR V ALHO, R. A. Operational Systems. In: Rogerio Atem de Carvalho; Jaime Estela, Nano-satellites: Space and Ground Technologies, Operations and Economics. 1ed.: 2018, p. 50-65. ISBN-13 : 978-1119042037.

Start-Up

- Negocie.ai - Blockchain based investment tokenization service platform - CTO - Responsible for the development of mobile applications (iOS / Android - React Native), Web (React) and Backend (TS / JS) implementing TDD and Clean Architecture concepts.

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## STRENGTHS

Embedded devices

Automated tests

Design Thinking Experienced