Surname / First name	**Silva, Matias**
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Education and training
From October 2019 to 2023

University of Cambridge, Girton College

MEng Engineering, on track to a 2:1/1st

Course covers mathematical methods, electrical and information engineering including:
- physical principles of electronics, analysis of circuits and devices, linear circuits, electromagnetics, digital circuits and information processing
- mathematics, communications theory, control theory, and computing

Examples of coursework include:
- the integrated electrical project (IEP) – designing and simulating circuits with LTSpice, building and testing different blocks of an AM radio using a Picoscope and a signal generator. Main challenge here was tweaking the self-made inductor to achieve resonance at the desired frequency**.**
- the structural design project (SDP) – sketching out orthographic and isometric prints for an aluminum bridge and later building it. Problem solving involved sourcing and bending custom sheet metal components to reinforce the structure and in the end my group was the only capable of withstanding a load of 8kN.
- Computing and numerical analysis with Python through structured self-learning activities involving practical engineering problems and numerical integration

From 2016 to 2019

Carlucci American International School of Lisbon
IB Diploma Programme candidate
American High School Diploma candidate

Final grade of 45 points in the International Baccalaureate May 2019 Examinations

Graduated Top Scholar of Carlucci AIS Lisbon

Experience
Courses and internships

Internship at PragmatIC, Cambridge (July 2020 to September 2020)
- Project title "developing extended APIs for an ARM-based Bluetooth-enabled RTL8762AR chip"
- Developed a bespoke interface for setting hardware registers, configuring decode algorithm variables and polling for RFID tag reads via UART
- Architectured an API and implemented it on an Espressif ESP-32 using the ESP-IDF and FreeRTOS tasks to listen to incoming data, dispatch commands to queues and process data according to its type

Given full scholarship to attend Columbia University's (New York) summer immersion program in *"Investigations in Theoretical and Experimental Physics"* (Summer 2018)

Internship at Celfinet, Portugal (August 2018)
- Project based on the LoRa wireless network protocol
- Built, designed and coded base-station and receiver system to transmit data
- Integrated an SD card and display to monitor signal strength to determine the real-life feasilbility of the technology in a "smart" garage

Projects
From 2017- 2021

Created and maintained a video conferencing platform for my university during COVID-19 used by hundreds of staff and students (see here for more detail)
- Given award for my work by the Cambridge University Center for Teaching and Learning
- Built custom Ansible playbooks for consistent and on-demand deployment of BigBlueButton servers, used Xen for management of virtual machines, designed a bespoke recording workflow
- Developed a web application to interface with the BigBlueButton API – was used to host the virtual freshers' fair and several college-level fairs

Contributor to the BigBlueButton free, open-source video conferencing project

Licensed beginner and intermediate radio amateur from Radio Society of Great Britain. Member of Cambridge University Wireless Society undertaking training for advanced level exams.

- Training includes the operation of transceivers, understanding of radio transmission, construction of own radio kit
- Aim is to achieve an advanced amateur radio license and callsign to be used globally

Home automation based on self-learned knowledge of electronics in a makeshift lab
- Using Node-RED flows with relays to program an energy-friendly heater that turned on at specific times, allowing me to wake up at a comfortable temperature
- Hardware used included ESP32/8266s, ATmega328Ps, and Raspberry Pis
- Using insulated DS18B20 sensors to log exterior and interior temperature and humidity levels in a relational database to monitor temperature variations in Lisbon over one year

Team leader of European Space Agency AstroPi project at CoderDojo LX and Futurix
- Wrote Python code that creatively displayed accelerometer and gyroscope data to astronauts on the ISS on custom ESA Raspberry Pi kits
- Coordinated amongst a team of 10 volunteers on two similar projects

Programming of complex games such as Simon Says and "Catch" in JavaScript using graphics and physics libraries (p5.js and matter.js) to track highest scores using Firebase "database as a service" in real-time

Additional information

Languages	English, Portuguese, Spanish, Mandarin (CEFR B2/C1), French (CEFR B2/C)
Technical skills	- Embedded systems: ESP32/8266, ESP-IDF, wireless communication (LoRa, Wi-Fi, RFID, Bluetooth) - Programming: Python, JavaScript, Java, MATLAB, C, C++, Bash - Others: Linux system administration, web application development, CI, Git, Docker, nginx, node.js - CAD: basic skills in SOLIDWORKS and engineering drawing gained over a semester course
Mentionable honours and awards	- Recipient of Girton College's Mary Ann Leighton scholarship and Jane Catherine Gamble prize - Outstanding Student Contribution to Education Award from the Cambridge University Center for Teaching and Learning, signed by the Senior-Pro-Vice Chancellor for Education (source, source 2) - Recipient of iGEM university scholarship - Subject excellence award (20-times recipient) in Carlucci AIS Lisbon (2017-2019) - Recipient of National Honor Society university scholarship - National Pi memorization record holder for Portugal *Duke of Edinburgh's silver award* achieved following an expedition to South Africa, which developed team collaboration skills in a series of nature-involved challenges (2016) - Beginner French certificate with distinction at the CUED Center for Languages and Inter-communication
Conferences	Model United Nations - Delegate: The Hague International MUN (2018), Colégio Internato dos Carvalhos MUN (2017), Iberian Model United Nations (IMUN) (2017), IMUN (2016) - Officer and administrative staff leader: IMUN (2018) (400+ attendees), Junior Model United Nations Sintra (2018) (300+ attendees)
Leadership roles	- Junior Treasurer and volunteer of *CU Student-Run Computing Facility* - Secretary and webmaster for *Cambridge University Portuguese Society* - Webmaster for *CU SynBioSo and CU First Aid Society* - Champion and mentor of CoderDojo LX (Lisbon, from 2018) - Community service – weekend cook for FoodCycle in Cambridge to combat food waste - Girton College Student Ambassador - Leader of school Computer Science and Electronics club (2017-2019). Projects include: - diagnosis and repair of broken carbon dioxide sensors used in biology labs - designed and built a remote weather station with built-in SD card logging to keep track of temperature and humidity levels (soldering, circuit design, C++ and CAD) - Treasurer and member of the *Vasco da Gama* Chapter of the National Honor Society (2017-2019) - Treasurer, member, and events leader of the Student Council (during Years 8-13)