



Matias Wang Silva

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 [matiasilva](#)
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Education

- 2022 - 2023 **Master of Engineering**, *Girton College, University of Cambridge*
Specialized in Electrical and Electronic Engineering
Tuition fully funded by Raspberry Pi bursary
Awards: Beatrice Mills Prize, Charlotte Rycroft Travel Award, Mary Ann Leighton Scholarship
- 2019 - 2022 **Bachelor of Arts in Engineering**, *Girton College, University of Cambridge*
Conferred title of 'Scholar' and formally admitted to the College's Foundation – top 3% of year
Awards: iGEM scholarship, Phyllis Tillyard Prize, Jane Catherine Gamble Prize, Mary Ann Leighton Scholarship, Outstanding Student Contribution to Education Award ([view](#), [view](#))
- 2017 - 2019 **International Baccalaureate**, *Carlucci American International School of Lisbon*
Grade: 45 out of 45 points, top 0.41% worldwide

Employment

- Nov 2023 - present **ASIC Engineer**, *Raspberry Pi*, Cambridge, UK
- Contributed majorly to internal software libraries for upcoming silicon and wrote system-level tests to verify integration of various blocks
 - Performed bringup of multiple ARM-based SoCs following tapeout and verified bug fixes on a Python-automated FPGA platform
 - Wrote extensible Python tooling to auto-generate internal files, including the C HAL and simulation files, used in past and upcoming silicon
 - Designed custom IP blocks from specification, to RTL, to verification with a C test

Work Experience

- 2022, 4 mo **ASIC Engineer**, *Raspberry Pi*, Cambridge, UK
- Wrote system-level tests in C to ensure compliance with ARM TrustZone for various blocks in the Cortex M33-based RP2350 microcontroller
 - Applied tools, including Cadence SimVision, Xcelium, ARM Tarmac, and the GNU C toolchain, to debug failing C tests, fixing bugs in RTL as they appeared
 - Designed behavioral memory IP and block-level testbenches for verification of the RP2350 QSPI memory interface
 - Gained familiarity with ARM AMBA protocols, ARMv8-M architecture with TrustZone and RTL simulation methodologies
- 2021, 3 mo **Software Engineer**, *Raspberry Pi*, Cambridge, UK
- Wrote [C applications](#) using a CMake-based toolchain to support the public launch of the RP2040 Cortex M0+ microcontroller
 - Designed corresponding hardware circuits to demonstrate the feature set of RP2040 and fixed bugs in the SDK as they appeared
 - Developed Python tooling to auto-generate the official [Raspberry Pi Pico C HAL](#), including structs, from internal register data and the CMSIS SVD format
- 2020, 3 mo **Embedded Software Engineer**, *PragmatIC Semiconductor*, Cambridge, UK
- Developed a bespoke Electron-based GUI to interact with a customer demonstration board containing PragmatIC's FlexIC reader
 - Extended the demo board with wireless capabilities to improve ease of use
 - Developed a FreeRTOS-based application for setting and reading peripheral registers on an ARM Cortex-M0+ MCU, interfacing with the GUI and the ESP32 with JSON messages

Technical skills

- Hardware SystemVerilog, ARM assembly, computer architecture, ARM AMBA protocols, ARM Cortex-series microcontrollers, data protocols

Software Python, C, Make, CMake, JavaScript
Tools SimVision, Xcelium, cocotb, Icarus, Yosys
Systems Linux for embedded development and server system administration, Ansible

Languages

Native English, Portuguese
Professional French, Mandarin *CEFR C1, HSK3*
Working Spanish *CEFR B2*

Projects

- RISC-V minimal SoC (WIP)
- Designed an RV32I-compliant RISC-V processor with a minimal SoC design complete with an AHB-powered interconnect and a UART
 - Performed formal and system-level verification using cocotb and riscv-formal
 - Tested on various FPGA platforms, including a Lattice iCE40, a GOWIN LittleBee and a Xilinx Zynq-7000
 - [Project link](#) and [FPGA playground](#)
- Girton College Spring Ball
- Head of IT & Ticketing for my college's ball at university for two years in a row
 - Managed the website's DNS, static site generation with Hugo, and hosting
 - Wrote a Django-based ticketing platform that handled thousands of concurrent requests, QR code-based ticket generation and decentralized ticket scanning
 - Developed familiarity with backend architecture, including remote PostgreSQL databases and WSGI app deployment on Heroku
- Cambridge Computing Facility
- Maintained a video conferencing platform for my university used by hundreds of staff and students in response to urgent pandemic demands
 - Given award for my work by the Senior-Pro-Vice Chancellor for Education
 - Managed a server cluster hosted in-house with Ansible playbooks for on-demand deployment of nodes, using Xen for VM management and Python for general scripting
 - Wrote a web frontend in Flask for university events that interacted with a central loadbalancer to distribute video load among the cluster
 - Rewrote and redesigned the entire [internal and external documentation](#) set

Interests

- Analog photography
- [Online portfolio](#)
 - Capturing street, landscapes, and portraits on film with manual 70s, 80s cameras
 - Home b/w, color development and processing in self-made darkroom
- CU Gastronomy Society
- [View website](#)
 - Started a university society dedicated to reviewing restaurants
 - Built the website from scratch and manage content publishing
 - Write reviews for restaurant visits and coordinate the society's activities
- Pi memorization
- National Pi memorization record holder for Portugal to 601 digits