

# Joao Guilherme R. F. Lopes

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Portfolio: <https://joaoguilhermelopes.github.io/JoaoGuilhermeLopes-Portfolio/>

## Objective

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An assured, multilingual and program experienced Computer Hardware and Software student with diverse project-based experiences. Acquiring various valuable programming experiences on various languages along with some expertise on hardware implementations such as PCBs and program testing abilities. Possessing a confident teamwork and communication abilities acquired by the previous university projects and job opportunities that can ensure a structured and organized approach to completion. Now looking to fully utilise the gathered skills through graduate opportunities as a software developer.

## Education

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**Coventry University | Coventry**

September 2020 – November 2022

BEng in Computer Hardware and Software Engineering

## Skills

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**Programming:** Java, Python, C, C++, SQL, HTML, VHDL, Assembly

**Platforms:** Linux (Ubuntu, Slackware, Debian), Microsoft Windows, Android, Mac OS

**Hardware:** Raspberry Pi, ARM Mbed microcontroller, Arduino, ESP-32

**Software:** Android Studio, Visual Studio Code, IntelliJ, GitHub, Proteus, Vivado, Mars, Eagle, MATLAB,

**Communication:** Design proposals, technical reports, presentations (large and small audiences)

**Languages:** English (fluent), Portuguese (native), Spanish (fluent)

## Projects

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### Room Conditioning Automation System Using (Mbed - C++)

- Designed a decentralized room conditioning automation system using a STM32F469NI board in Mbed – C++ language with the objective to control the elements around the house and regulating them as the user desired.
- Designed the respective system GUI for the application in the STM32 board display with the respective menus/submenus available for each element required to control and the following information values.
- Implemented the system in a real-world application by designing and printing a double layer PCB board that fitted the board with all the selected hardware components to fulfil the requirements of the system.
- Conducted substantial research and identified the problems in current room automations systems that may jeopardize users' privacy and comfort.
- Created multiple classes, objects, pointers, interrupts, threads and timers and imported some required libraries in order to be able to control automatically/manually the different elements in the system such as temperature regulation, light control, door locks management and curtains adjustment.

### Client and Server based Library Management System with GUI (Java)

- Designed a GUI system using swing and AWT libraries for a librarian to manage books and members  
Designed the UML diagrams for the server-client application using UML studio.
- Created a client-side application and server sided program that communicated with each other over a TCP network connection using java.net library.

## Bar Graph Display (C++)

- Created an application using sStream library to read .csv files to plot a desired bar graph table such as vertical/horizontal and counting the total amount of characters to display the graph and to fill the required gaps.
- Designed the application to output a 2d grid map covering all nodes using ASCII art.

## Single-Cycle CPU

- Designed a single cycle CPU using System Verilog
- Extended the processor design to support more instructions like R-Type, bltz, xori and more.
- Made changes to Datapath, main and ALU decoders, instruction/data memories, interfaces and control signals for every new instruction.
- Created a testbench to exercise all the instructions by performing a computation.

## Relevant Coursework

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**Advanced Computer Architecture:** Designed and proposed a complete and working computer system for a firm, including a description of the main components of the system. Described parallel processing techniques supported by the system. Justified the system by described the results of benchmark. Created an assembly language program to implement a sorting algorithm using MIPS instruction Set.

**Agile Development:** Worked as a Scrum Master and Project Owner to lead the team from different courses to complete front-end and back-end of an automation system using Agile methodology. This project included planning, professional development, choices, and version control. Took the responsibility of completing the project by distributing and managing tasks amongst active members, when a group of members decided not to contribute anything at a critical point in the project.

**Embedded Microprocessor Project:** Created a monitoring system for a medical warehouse using PIC18F4520 microcontroller. Designed the login system, light sensing system and temperature measurement system with all the intentional functionalities such as counting the passing boxes on a production line (with counter interrupts) and pause it for a certain amount of time when reaching when the target point, restarting then the process. Also created circuit schematics for the system using Proteus and tested all the side circuits.

## Activities

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<b>Java Programming: Arrays, Lists, and Structured Data</b> - Duke University (Coursera)	June 2020
<b>Pascal Programming Language</b> – College	May 2019
<b>Cyber Security</b> - Coventry University (advantage module)	December 2019
<b>Photoshop Certification</b> - Coventry University (advantage module)	March 2022

## Experience

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<b>July '21 to Present</b>	<b>Bartender / Meat Carver</b>
Restaurant - Rodizio Rico	
<b>May '19 to June '21</b>	<b>Food Manufacturer / Mixer</b>
Food Processing Warehouse - Mission Foods	