

# Christos Melas

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## Education

September 2016 – September 2017

**University of Birmingham, United Kingdom**, School of Computer Science.  
MSc in Advanced Computer Science  
**Modules:** Operating Systems, Networks, Distributed and Parallel Computing, etc.

September 2011 – June 2016

**Technical University of Crete, Greece**, School of Electrical and Computer Engineering.  
Diploma (MEng) in Electrical and Computer Engineering, **Grade** 8.06/10.  
**Thesis:** Unification of peripheral sensors with an autopilot in an Odroid platform  
**Modules:** Information System Security, Design and Development of Information Systems, Computer Organization, Microprocessor-Based Embedded Systems, etc.

## Technical Skills

- Good knowledge of C, Java, Python, Matlab and VHDL
- Working knowledge of CUDA, PL/pgSQL, Android application development, Arduino, MIPS assembly, and LAD/STL
- Good knowledge of Linux, macOS and Microsoft Windows
- Good knowledge of Git, Adobe Lightroom, Microsoft Office (Specialist Master)
- Well-skilled at computer problems troubleshooting and repairs

## Freelancing

Worked as a freelance photographer while in my undergraduate studies, as I have a keen interest in photography, especially in landscape and street photography since 2013. I am also one of the founding members of Spotlight, a team of freelance photographers covering social and nightlife events in Greece, active from May 2014 until February 2015.

## Group Academic Projects

- **March 2014 – May 2014, Extended Instruction Set Processor:** Working in a group of two, developed an extended RISC 32-bit processor in VHDL. We created and later combined all components of a datapath, such as an ALU, an Instruction Fetch unit, and a Register File. At last, we combined all components with a separate control unit in order for the processor to be able to execute some more complex instructions from the extended instruction set. The result was a fully functioning basic RISC processor.

- **April 2014, Hotel Booking Management Application:** In a group of three, we designed and developed a system that is able to support multiple hotels in different countries. More specifically, we used PostgreSQL for the database, along with Java for the management of the database, such as for the table initialization, for calculations, etc. The final outcome was a robust and efficient database implementation.

## Individual Academic Projects

- **November 2016, Linux Firewall Module:** Developed an extension to the Linux firewall which makes it possible to specify which programs are allowed to use some outgoing port. More precisely, I created a user space program and a kernel module. The user space program is responsible for setting up the firewall, while the kernel module is the firewall module itself. Used C for its programming, and various Linux kernel APIs as well. At the end, the firewall was able to allow or block outgoing connections, based on the port that they use and the process that initiated them.
- **November 2016, Windowed Average Using CUDA:** An efficient implementation for calculating the windowed average of a large array of integer elements in CUDA. At first, the Blelloch algorithm is used for level-scanning the large array, and then the windowed average is calculated.
- **October 2016, SysExplorer v2 Web Application:** Designed and created a multithreaded server in C using Pthreads, capable of handling multiple client requests. The server is capable of responding accordingly to the client request, by either sending the requested file or by sending the contents of its filesystem, such as directories and files in an appropriate HTML format.
- **November 2015 – June 2016, Diploma Thesis: Unification of Peripheral Sensors with an Autopilot in an Odroid Platform.** The aim of the thesis was to integrate an Android device to an open-source Unmanned Aerial Vehicle (UAV) autopilot software, PenguPilot, running on a Linux embedded computer, the Odroid XU3 Lite, by creating a reliable and efficient communication channel between the two devices, and using the sensors of the Android device for the operation of the UAV. More specifically, I managed to create a serial communication channel via the USB ports of the two devices, then developed an Android application in order to transmit the sensor measurements to the embedded computer. Finally, I modified the source code of the autopilot software accordingly in order to use the accelerometer, the gyroscope, the magnetic field sensor, the barometer and the GPS receiver of the Android device instead of external I<sup>2</sup>C sensors.
- **January 2016, Secure Communication Project:** Created a multithreaded server in Python for secure communication with multiple clients by using the Advanced Encryption Standard (AES) symmetric cryptography. Initially, the server and a client exchange the symmetric key using their asymmetric RSA-2048 public-private key pairs and then they proceed in exchanging encrypted messages using the symmetric key and the AES.

## Personal Interests

- Interested in almost all fields of technology, such as computers and computer hardware, electronics, audio equipment, smartphones, and gadgets. Also, I am the person that friends and relatives call when they need technology-related help.