NIKOLAOS CHATZIPAPAS

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SUMMARY

- 4+ years of experience in electronics design, embedded systems and hardware engineering, with a portfolio of over 30 PCB designs, including designs installed in the CERN accelerator.
- Led a team of over 20 engineers on an unmanned solar UAV project focused on forest fire detection. Conducted interviews for more than 30 applicants.
- Saved over 100,000 CHF by designing a low-cost analog PCB, increasing cards reliability by 20%.
- 1 out of 15 ethical hackers selected worldwide, conducted MITM attacks on the latest developed european car environmental protection systems.
- Graduated with an 8.71/10 GPA, ranking in the top 4% of my class in Electrical Engineering & Computer Science, 5-year Master's and Bachelor's degree.

PROFESSIONAL EXPERIENCE

European Council for Nuclear Research (CERN) *2 years 2 months* Geneva, Switzerland

World's leading particle physics laboratory, researching the fundamental structure of the universe. It operates the Large Hadron Collider (LHC), with over 10,000 researchers, 2,500 staff and has an annual budget exceeding 1 billion CHF.

Electronics Engineer September 2022 – Present

- Led the design of radiation-tolerant electronics for High-Luminosity LHC projects.
- Designed and validated in radiation Digital Input Digital Output card for cryogenic valves control.
- Prototype devolopment of new WorldFIP communication cards, the most critical card in cryogenic crates. Implemented Wishbone FSM in VHDL for data exchange between two FPGAs.
- Saved over 100,000 CHF by designing a low-cost analog PCB using only transistors, resistors, diodes and capacitors, replacing FPGA-based solution. Led to 20% cards reliability increase.
- Daily supervision of masters student for 6 months, on preliminary design of Analog Input/Output card based on 4-20 mA loop. One year supervision of apprenti on soldering and testing tasks.
- Coordinated electronics projects for two CERN graduates, including wien bridge design.
- Performed accelerated life testing of ICs. Life decreased by half for every 10°C increase.
- Designed high-voltage card protection systems, up to 2.1 kV, using thyristor surge suppressors.
- Led electronics radiation testing campaign at CHARM facilities using automated Matlab. Tested how parameters of transistors, mosfets, operational amplifiers, voltage regulators were affected.
- Developed Python based applications for inventory automation, reducing working time by 60-80%.
- Engineered radiation-tolerant 3D printed piezo valve cases using ULTEM material.

Aristotle Space and Aeronautics Team (ASAT) *2 years 4 months* Thessaloniki, Greece

The largest and most prestigious aerospace student team in Greece, ASAT conducts research through two departments: Aeronautics and Rocketry, with 51 active members. ASAT ranks among the top 10 student teams in Europe, placing 9th in Aeronautics and 7th in Rocketry in the latest competitions.

Systems Engineer January 2022 – June 2022

- Coordinated more than 20 engineers on an unmanned solar UAV project for forest fire detection.
- NASA's system engineering approach. STPA analysis for risk management.

Coordinator of Solar Energy Management team September 2020 – January 2022
Solar Engineer March 2020 – August 2020

- Supervised 4 electronics engineers on technical tasks.

- Worked on flexible solar cells, high-density rechargeable batteries, charging circuits such as Maximum Power Point Tracker and embedded fuzzy logic using arduino boards.
- Worked on charging circuit simulations, mainly in Matlab/Simulink.
- Coordinator of Arduino webinar with over 300 participants. Copresented PCB design workshop.

Democritus Industrial Robotics (DIR) *5 months* Xanthi, Greece

Leading research group specializing in industrial robotics innovation, competing in RoboCup and RoboIndustrial League.

Computer Vision Engineer March 2021 – July 2021

- Led cavity detection in Python, using high-end camera on robotic arm for Robocup 2021.

EDUCATION

DEMOCRITUS UNIVERSITY OF THRACE *5 years* October 2016 – October 2021

Master's & Bachelor's, 5-year degree in Electrical Engineering & Computer Science

- Grade: 8.71/10, Excellent, top 4%, 65 courses, 300 ECTS.
- Thesis: "Study and implementation of an experimental DC motor control apparatus and investigation of using microcontroller embedded artificial intelligence methods".

Laboratory experience in incremental encoders, DAC's and ADC's, oscilloscope. Embedded software using Artificial Intelligence algorithms in Arduino and STM32 boards. Simulations of my hardware in Simulink.

DISTINCTIONS

Battery 2023 Young Scientist Event *June 2022* Brussels, Belgium

- Submitted proposals for the future of the European battery research and co-signed the manifesto.

DIAS Hack a Truck part 2 *April 2022* Rotterdam, Netherlands

- 2-day physical hacking event about tampering latest developed car environmental protection systems, hosted by TNO, Bosch, Ford, FEV.
- 15 selected hackers worldwide, forming 4 teams.
- My team was 1 out of 2 that successfully hacked a testbed by performing MITM attacks on CAN-bus and Autosar SecOC on Raspberry Pi testbeds.

DIAS Hack a Truck part 1 *May 2021* Online event

- 2-day online event. 20 hackers selected worldwide, including few undergraduate students.
- I found a vulnerability on EU6 regulations which impressed the experts.

PAPERS

- "Interval Type-2 Fuzzy Logic Controller Development for Coreless DC Micromotor Speed Control Applications", *ICCCES 2022.*
- "Implementation of current and ventilation control for enhanced TEC performance", *PACET 2019.*

SKILLS

Engineering

PCB design, digital & analog electronics, power electronics, FPGA, microcontrollers, embedded artificial intelligence, closed loop control (PID, fuzzy), instrument control (GPIB), thermal simulations, 3D printing.

Coding

C, C++, Python, VHDL, System Verilog, Latex.

Software

Altium, Matlab, ANSYS, Quartus, PyCharm, Linux.