NIKOLAOS CHATZIPAPAS

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SUMMARY

- 5 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.
- Directed a team of over 20 engineers on an unmanned solar UAV project for forest fire detection.
- Saved over 100,000 CHF by designing a low-cost analog PCB, increasing cards reliability by 20%.
- Among 15 ethical hackers selected globally, tampered latest car environmental protection systems.
- Master's in Electrical Engineering & Computer Science, graduated with 8.71/10 GPA, top 4%.

PROFESSIONAL EXPERIENCE

European Council for Nuclear Research (CERN) — 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 — 09/2022 – Present

- Led the design of radiation-tolerant electronics for High-Luminosity LHC projects.
- Developed and prototyped new WorldFIP communication cards, the most critical card in cryogenic crates. Implemented Wishbone FSM in VHDL for data exchange between two FPGAs.
- Delivered savings exceeding 100K CHF by designing a low-cost analog PCB using only transistors, resistors, diodes and capacitors, replacing FPGA-based solution. Led to 20% reliability increase.
- Supervised a master's student on a daily basis for six months, on preliminary design of analog card based on 4-20 mA loop. One year supervision of apprentice on soldering and testing tasks.
- Coordinated electronics projects for two CERN graduates, including Wien bridge oscillator design.
- Designed and prototyped new radiation tolerant digital cards for cryogenic valves control.
- Directed two radiation campaigns at CHARM, using an automated MATLAB tester to evaluate the impact of radiation on transistors, MOSFETs, operational amplifiers, and voltage regulators.
- Performed accelerated life testing of ICs, reducing lifespan by 50% for every 10°C increase.
- Designed high-voltage card protection circuit, up to 2.1 kV, using thyristor surge suppressors.
- Reduced inventory working time by 60-80% by developing Python automation tools.
- Engineered radiation-tolerant 3D printed piezo valve cases using ULTEM and Accura25 materials.

Aristotle Space and Aeronautics Team (ASAT) — 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 and ranks among the top 10 student teams in Europe.

Systems Engineer — 01/2022 – 06/2022

- Coordinated more than 20 engineers on an unmanned solar UAV project for forest fire detection.
- Applied NASA's systems engineering methodology, and STPA analysis for risk management.

Coordinator of Solar Energy Management team 09/2020 – 01/2022
Solar Engineer 03/2020 – 09/2020

- Supervised 4 electronics engineers on technical tasks. Interviewed over 30 applicants.
- Engineered flexible solar cells, high-density rechargeable batteries, charging circuits such as Maximum Power Point Tracker integrated with embedded fuzzy logic, using microcontroller boards.
- Performed simulations of charging circuits, using Matlab/Simulink.
- Directed Arduino webinar with over 300 live participants. Co-presented PCB design workshop.

Democritus Industrial Robotics (DIR) Xanthi, Greece

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

Computer Vision Engineer 03/2021 – 07/2021

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

EDUCATION

Democritus University of Thrace *5 years* Xanthi, Greece

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

- Grade: 8.71/10, Excellent, top 4%, 65 courses, 300 ECTS.
- Thesis: Experimental DC motor control using microcontroller embedded artificial intelligence.

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 2030 Young Scientist Event *June 2022* Brussels, Belgium

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

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

- Physical hacking event, hosted by TNO, Bosch, Ford, and FEV. Tampered the latest developed car environmental protection systems.
- 15 selected hackers worldwide, formed 4 teams. My team was 1 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

- 20 ethical hackers selected. Identified a vulnerability in EU6 regulations that garnered recognition from industry experts.

PUBLICATIONS | SKILLS | INTERESTS

- 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*.

Engineering

PCB design, digital and analog electronics, power electronics, FPGA, microcontrollers, embedded AI, closed-loop control (PID, fuzzy), instrument control, 3D printing.

Coding

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

Software

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

Interests

Football: played semi-professionally for 5 years, plants.