Jacek Budziszewski

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Education

University of Cambridge, 2020 – 2021
Master of Research in Connected Electronic & Photonic Systems

- **Modules:** Electronic Sensors & Instrumentation; Photonic Systems; Quantum and Nano-technologies; Physics and Optics of Nanostructures; Entrepreneurship theory and practice.
- **Research Project: Photonically driven THz mixer**: proof of concept – project carried out in collaboration with UCL and the Science and Technology Facilities Council, demonstrating a satellite-grade, single-chip receiver (≈70 µm die integrating a Schottky mixer and Uni-Travelling Carrier Photodiode as local oscillator). Planned and executed lab testing to confirm feasibility and generate fabrication-ready data. Designed and EM-simulated the on-chip microstrip interconnect between mixer and LO in CST Studio Suite, achieving >60% simulated power transfer.

University of Leeds, The School of Electronic & Electrical Engineering 2016 – 2020
MEng Electronic & Electrical Engineering – course accredited with IET, Final Grade: **Honours Class 1**

- **Selected modules and grades:** Communications Networks & Signals (95%); Electric machines (95%); Electric Power Systems (94%); Power Electronics (92%); Further Engineering Mathematics (90%); RF & Microwave Engineering (87%); Control Systems Design (85%); Transistors & Optoelectronic Devices (82%); High Frequency Electronics (81%); Communications Systems (79%); Integrated Circuit Design (78%); Algorithms & Numerical Mathematics (78%); Embedded Systems Project (77%); Digital Electronics and Microcontrollers (76%); Embedded Systems (75%)
- **Master's Thesis: Waveguide Engineering of Terahertz Quantum Cascade Lasers (QCLs)** – for this project I fabricated differently sized QCLs in the Cleanroom. Then, I characterised them with FTIR Spectroscope and Power Meters and searched for their optimal structure that would provide the highest power that they can emit (**Grade: 76%).**

Industrial Work Experience

FFE Ltd, Cambridge, UK
Sep 2024 – Present
Development Engineer

Leading company-wide innovation with a focus on optical systems, developing product concepts and validating new technologies. Spearheaded the characterisation of near-infrared sensors for the next generation of our flagship fire-detection product: designed an optical test rail (selected a suitable black-body source, tuned a chopper wheel, built signal-processing electronics, and captured results to .CSV files) and automated standardised test suites in Python. The programme concluded with sensor down-selection for production and a series of technical reports. Additional contributions include resolving high-temperature LCD failures and designing an automated end-of-line test rig for a product that previously lacked a standardised post-production test. Currently, I am designing entire system for automated Pan Fire testing facility for FFE's Centre of Excellence, which includes automated ignition, refuelling of pans, distance adjustment for detectors under test, data acquisition system and safety systems.

Sainsbury Wellcome Centre for Neural Circuits, London, UK
Jan 2024 – Sep 2024
FabLab Research Engineer (Electronics)

Designed and delivered end-to-end electronic systems for neuroscience experiments, translating researchers' specifications into robust, lab-ready devices. Owned the full hardware lifecycle—concept sketches and prototype drawings, schematic capture, PCB design, and parts sourcing/production—plus mechanical design in SolidWorks and hands-on assembly, bring-up, and validation using advanced lab and rework equipment. Tooling included Altium Designer and MicroPython on Raspberry Pi Pico. Representative projects: an RFID-based animal positioning system for a closed maze, a high-speed USB divider for an advanced control platform, and an optical-sensor-driven liquid extraction system for automated laboratory workflows. Worked closely with Aeon research group and co-authored a paper for Nature Neuroscience: "Aeon: an open-source platform to study the neural basis of ethological behaviours over naturalistic timescales"

Amazon, Szczecin, Poland
Sep 2023 – Dec 2023
Operations Manager, Pathways in Operations Internship

Developed as an effective people manager in a fast-paced, high-pressure fulfilment environment, leading up to 200 Associates and owning team safety, performance, and quality KPIs. Alongside daily operations, led the rollout of automatic label scanners: designed a custom mounting rig, co-created optimal positioning/angles and scan cadence with frontline staff, and executed centre-wide deployment during peak. Result: a 7% throughput uplift across all 200 packing stations.

FFE Ltd, Cambridge, UK
Aug 2022 – Aug 2023
Electronics Engineer (New Product Development Division), Contract

Drove concept development for a next-generation end-to-end optical beam fire detector. Designed and executed tests to characterise the targeting laser and IR photodiode, then produced full electronics for the device—schematics plus 2D/3D PCBs in Altium Designer—culminating in working concept boards for both transmitter and receiver ends. Operated within Agile workflows and contributed to new engineering processes and standard operating procedures.

Excelitas Noblelight Cambridge, UK
Jul 2021 – Jul 2022
Lab/Install Engineer (Sales and Innovation Division)

Partnered with customers to develop arc lamp–based flash systems tailored to their requirements, translating needs into feasible, profitable concepts. Led laboratory feasibility trials and cost–benefit assessments; managed the company lab, built optical/electronic test setups, and automated processes in Python to mirror mass-production conditions. Worked in Agile, serving as the bridge between customers and the engineering team to drive clear requirements, rapid iteration, and mutually optimal solutions.

Henry Royce Institute (University of Leeds), Leeds, UK
Jun 2019 – Aug 2019
Intern (Bragg Centre for Materials Research)

Calibrated bolometer and pyroelectric power meters for QCL characterisation at the Henry Royce Institute, mastering QCL operation and THz power measurement with a lock-in amplifier (voltage readout). Established calibration factors by correlating lock-in voltage readings with continuous measurements from a Thomas Keating power meter to output results in Watts. Extended the institute's LabVIEW application to integrate a new meter and live displays. Re-engineered the experimental bench and lab workflow to boost accuracy and throughput, cutting QCL characterisation time by over an hour (≈50%).

Achievements

- Finished First Level of 'National Music School of Levels First and Second in Jastrzebie-Zdroj' (with piano as a main instrument) with distinction (2003-2009).
- Second Officer at the sailing cruise around Spitsbergen (over 1000 miles) raising over 100000PLN (~£20000) for charity 'Plyniemy Polsko' ('Let's sail Poland') that takes care of children with cerebral palsy and autism.
- Member of crew at the sailing cruise from Spitsbergen to continental Norway which was awarded the Scout Sailing Cruise of the Year 2015.
- Member of 'Almukantarat Astronomical Club' that associates winners of most prestigious Science Competitions in Poland. The Club hosts many conferences as well as workshops preparing its members for public speeches
- Committee member of Leeds University Union Consulting Society (STEM Students Representative)
- Google Project Management Professional Certificate
- IBM Data Science Professional Certificate (with Python)
- Co-author of a Nature Neuroscience paper: "Aeon: an open-source platform to study the neural basis of ethological behaviours over naturalistic timescales"

Technical Skills

- Computer programming: C, C++, Python, MicroPython, Objective C, LabVIEW, Verilog
- Simulation and Design software: Microwind, Multisim, Microwave Office, SpaceClaim, Eagle, CST Studio Suite, SolidWorksPCB, SolidWorks, Altium Designer, Matlab, LTSpice
- Agile project management: Scrum, Kanban, Trello, ClickUp, Jira, Kaizen, Six Sigma

Volunteering

John's Beach Service, Myrtle Beach, SC, USA
Jun 2018 – Sep 2018
Ocean Lifeguard

The Polish Scouting and Guiding Association (ZHP), Rybnik, Poland
Jul 2015 – Jul 2017
Sailing Instructor

References

Available upon request.