Mateusz Bączek

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Software engineer with 3+ years of experience, both in writing code and leading a team of programmers. Familiar with web development, systems programming and digital signal processing. Fascinated with computer-aided design processes, especially generative art and music.

Experience

Mission operations software development lead

SatRev

2021 — Present Wrocław, PL

Developed and maintained Satrev's in-house mission-operations software, used to operate the entire fleet of company's satellites. Leading a team of 3-5 programmers.

- Management & monitoring of software infrastructure
- Real-time communication protocols
- Message queues
- Metrics visualisation

`Python` `Rust` `Linux` `PostgreSQL` `Apache Kafka` `Ansible` `Azure` `Grafana` `Prometheus`

Software Developer

SatRev

2020 — 2021 Wrocław, PL

Developed the telemetry software and automation/testing tools used during the testing and integration processes of the STORK satellites. Worked on the software for the on-board computer for the STORK platform.

- Telemetry and ground station software
- Radio communication protocols
- Automatic testing tools

`Python` `PyTest` `Embedded Linux` `Buildroot` `Docker` `MQTT` `CI/CD` `Git` `InfluxDB`

Sofware Developer

BZB UAS

2020 Wrocław, PL

Worked on an integrated telemetry collection & sharing service for a semi-autonomous UAV dedicated to conducting photogrammetry scans.

`Python` `ArduPilot` `MavLink` `Embedded Linux` `OpenWRT`

Education

Higher

Sep 2022 — 2023 Wrocław, PL

M.Sc. Computer Science. Thesis title: DSP graph generation algorithm for solving the sound synthesis problem.

Wrocław University of Science and Technology

Sep 2017 — 2021 Wrocław, PL

B.Sc. Computer Science. Thesis title: Autonomous drone-based scouting system.

Student activity

At the university I participated in a student research circle, the Academic Aviation Club (Original Polish name: *Akademicki Klub Lotniczy*), dedicated to developing unmanned aerial vehicles. As a member, I've participated in a number of competitions, both as a programmer and as a team leader.

SAE Aero Design

2020 Florida, USA

Second place in general classification, second place in the Advance category. Developed a mathematical model predicting an optimal position for dropping a payload from a flying plane and built the telemetry software required to operate the system.

Droniada

2021 Kąkolewo, PL

Designed a visual marker detection system, based on machine learning algorithms. The system facilitated real-time marker detection on-board an autonomous drone, which then performed a precise release of pesticides (the subject matter of the competition were new technologies in agriculture). The team won the second place.

IAV – Intelligent Autonomous Vehicles

2019 Gdańsk, PL

Designed a system for determining the position of Bluetooth LE beacons, using an autonomous drone. The team won the first place.

Languages

- **English** – fluent
- **Polish** – native

Personal Projects

Running a personal website and a personal cloud

https://baczek.me

I'm using a VPS server to run a personal website and a number of both personal and public cloud services. Everything is monitored via the Grafana stack.

`System Administration` `Docker` `Prometheus` `Grafana` `Caddy` `Ansible` `Wireguard`

Collaborative sampler

https://github.com/Wint3rmute/libretakt

Written in a team of 4, the sampler is meant to reproduce the Digitakt-style workflow in a distributed environment. Each user has their own DSP engine running to assure minimal latency, but the changes each user makes in the sequencer state are synchronised in real time across a virtual „jam session''.

`Rust` `WebSockets` `DSP` `Audio Effects` `FFMPEG` `Media streaming`

Linux configuration repository

https://github.com/Wint3rmute/dotfiles

I keep my dotfiles documented and version controlled, with an Ansible-based deployment procedure which allows me to sync my configuration across multiple machines and bootstrap a new computer easily and quickly.

`Linux` `Ansible` `Git`