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   Wrocław, PL

SatRev

📅 2021 — Present

Developed and maintained Satrev's in-house mission-operations software used for operating 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 visualization

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

Software Developer   Wrocław, PL

SatRev

📅 2020 — 2021

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`

Software Developer   Wrocław, PL

BZB UAS

📅 2020

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

Wrocław University of Science and Technology

📅 Sep 2022 — 2023

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

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

Activity at university

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 participated in a number of competitions, both as a programmer and as a team leader.

SAE Aero Design 📍 Florida, USA

📅 2020

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 📍 Kąkolewo, PL

📅 2021

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 📍 Gdańsk, PL

📅 2019

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

Nokia Innovative Projects 📍 Wrocław, PL

📅 2018

Developed a prototype of a Pokemon-Go-alike game. The game world was generated procedurally, based on OpenStreetMaps. Players could gather resources and build structures Within the game world, that would be visible to other players visiting the same area.

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 synchronized in real time across a virtual „jam session''.

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

Personal Linux configuration 🔗 **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`