Peter Pihlmann Pedersen

6+ years experience developing full-stack applications for
environmental monitoring and scientific instrumentation

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POSITIONS

Postdoctoral Researcher
2022 – now

ETH Zurich Switzerland
- Developing robotic observatory control software, hardware, data processing, and public outreach for SPECULOOS and the ETH observatory
- Leading advancements in high-precision near-infrared photometry and instrumentation to detect and characterise new exoplanets
- Supervising Bachelor + Masters research projects (5 completed)

Co-founder
2018 – now

open-seneca United Kingdom
- Engineered air quality monitoring networks – developed core aspects of the hardware, software, and data analysis for sustainability targeted projects
- Led international collaborative projects, with a focus on the Global South

EDUCATION

PhD
2018 – 2022

University of Cambridge United Kingdom
Near-infrared instrumentation for robotic exoplanet transit surveys
Supervisor: Didier Queloz

Masters
2017 – 2018

University of Cambridge United Kingdom
Sensing Technologies
Electives: Embedded Systems, Computer Vision and Robotics, Image Processing and Image Coding, Electronic Sensors and Instrumentation

Bachelor + Masters
2013 – 2017

University of Manchester United Kingdom
Physics, First Class Honours
Electives: Maths of Waves and Fields, Advanced Dynamics, Wave Optics

SKILLS

Programming

Python (pandas, numpy, scipy, FastAPI), **Javascript** (NextJS, vanilla), **CSS** (Tailwind, vanilla), **C++** (Arduino, STM32), **C#** (.NET), **PHP**, **SQL** (MySQL, SQLite), nginx, Docker, Linux, Git

Additional

Data pipelines, hardware-software integration, time-series analysis, atmospheric & geospatial data processing

Select coding projects

- Astra: Robotic observatory control software (Python, FastAPI, SQLite)
- open-seneca maps: Air quality maps (Python, NextJS, C++)
- weatherflip.com: Weather search engine (FastAPI, NextJS, Tailwind CSS)

Misc.

- Strong teamwork, leadership, and project management skills
- Effective communication and cross-cultural collaboration
- Spanish (C1 proficiency)

SELECT COMMUNICATIONS

761 citations h-index 16

Talk
2024

United Nations Headquarters New York, USA
Innovations in air quality monitoring

Talk
2024

MIT Boston, USA
Detection of exoplanets using ground-based near-infrared instrumentation and robotic observatory systems

Paper
2023

Precise photometry, accounting for atmospheric water vapour MNRAS
P P. Pedersen, C A. Murray, D Queloz, *et al.*
Significantly increased the accuracy of ground-based light curves by removing atmospheric induced variability, in post. Enabling a RMS reduction of 53.8%.