Andreas **Poehlmann**

Physicist · Neuroscientist · Software Engineer

Current Residence: Berlin, Germany

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Work Experience

Pfizer Pharma GmbH - Machine Learning and Computational Sciences — *Berlin, Germany*

Senior Machine Learning Data Engineer — *Apr. 2023 - PRESENT*

Bayer AG - Machine Learning Research — *Berlin, Germany*

Research Scientist — *Jul. 2020 - Mar. 2023*

- Design and Implementation of data-management tools for ML Researchers to access petabyte scale image datasets
- Development of software enabling cloud-native human-in-the-loop machine learning in digital pathology
- Creation of visualization tools for large tile based annotated image datasets
- Productionization and continuous deployment of prototype ML models
- Management, quality control and maintenance of the MLR Group's open source digital pathology software stack

loopbio gmbh — *Vienna, Austria*

Software Engineer — *Aug. 2017 - Apr. 2020*

- Development of cloud based video analysis tools for behavioral biologists
- Design and development of universal metadata management system and browser based video annotation tools
- Development and construction of immersive virtual reality systems for insects
- System administration and deployment of computer and server infrastructure for loopbio costumers

Skills

Programming	Python, JavaScript, C/C++
Software Stack	Scientific Computing (Numpy, Scipy, Pandas, OpenCV), Hardware Control (pyusb)
	Data Engineering (Zarr, Fsspec, Kerchunk), Web Development (Flask, Streamlit, Dash)
Sys-Admin / Dev-Ops	Linux, Python Packaging, Pytest, CI/CD (Jenkins, GH Actions, Travis), Docker, Kubernetes
Experiment Design	Realtime virtual reality control systems, Embedded system design
Languages	German, English

Projects

CASIS Center for the Advancement of Science in Space — *remotely*

Technical Supervisor; Mod66 student experiment launched to International Space Station on SpaceX CRS-14 — *Jan. 2018 - Apr. 2018*

- Technical supervision of hardware and experiment design of a student science experiment measuring beta-amyloid decay in microgravity
- Development of software stack running on embedded Linux system for continuous experiment control and measurement recording

Python-Seabreeze software module for Ocean Optics spectrometers — *remotely*

Author and Maintainer; Available at python-seabreeze.readthedocs.org — *Sep. 2012 - PRESENT*

- Development of pure Python USB communication library for controlling Ocean Optics spectrometers
- Development of C++/Cython wrapper for integration of proprietary Ocean Optics spectrometer library
- Deployment of module for Windows/MacOS/Linux across x86/x64/arm architectures

Research Experience

University of Freiburg — *Freiburg, Germany*

Scientific Assistant — *Feb. 2016 - Jul. 2017*

- Numerical simulation of *Drosophila* visual behavior under recreated published experiment conditions
- Design and optimization of a real-time virtual reality setup for fruit flies including real-time wing tracker

Research Institute of Molecular Pathology — *Vienna, Austria*

Research Assistant and PhD Student — *Feb. 2012 - Feb. 2016*

- Analytical and numerical modelling of asymmetric motion dependent visual system responses
- Design of web-based fly stock management system for increased lab productivity
- Construction of setup for precision temperature measurements in *Drosophila*

Fraunhofer task force for ceramic composite materials — *Bayreuth, Germany*

Scientific Assistant — *Jul. 2011 - Jan. 2012*

- Development of image-processing tools for X-ray computed tomography and automated production error analysis

University of Bayreuth — *Bayreuth, Germany*

Scientific Assistant and Diploma Student — *May 2005 - Jul. 2011*

- Investigation of bifurcation behavior of the Rayleigh-Taylor instability of magnetic fluids in rotating magnetic fields
- Development of novel optical method for surface tension measurements of fluids with reflective liquid-air boundaries
- Design and construction of USB controlled programmer for Microchip PIC embedded devices

Awards

2019 **NASA Space Apps Challenge**, Global Finalist: 'satellite data visualization app' majortom.outdated.at — *Vienna, Austria*

2012 **Vienna BioCenter PhD Fellowship**, Admission to the PhD program with stipend covering PhD fees — *Vienna, Austria*

Education

University of Vienna — *Vienna, Austria*

Doctorate in Molecular Biology — *Apr. 2012 - Aug. 2017*

- Thesis: "The role of asymmetric motion responses in *Drosophila* object tracking"

University of Bayreuth — *Bayreuth, Germany*

Diplom in Physics — *May 2005 - Nov. 2011*

- Thesis: "Radiographic measurement of the Rayleigh-Taylor instability in rotating magnetic fields"

Teaching Experience

Advanced machine learning for Innovative Drug Discovery (AIDD) Project — *Munich, Germany*

Invited speaker; Helmholtz Zentrum Muenchen — *Oct. 2021*

- Lecture / Workshop on advanced programming techniques in Python

MLR Group (Bayer AG) internal programming courses — *Berlin, Germany*

Course instructor; Bayer AG — *Jul. 2020 - Mar. 2021*

- Interactive courses on modern Python programming (testing frameworks, static type analysis, packaging)

CAJAL Behavior of Neural Systems Course — *Lisbon, Portugal*

Teaching assistant; Champalimaud Centre for the Unknown — *Jul. 2015 & Aug. 2016*

- Course design and supervision of students on freely walking virtual reality for fruit flies
- Course design and supervision of students on tethered flight virtual reality and visual stimulation

Computer measuring technology Course — *Bayreuth, Germany*

Teaching assistant; Experimental Physics V, University of Bayreuth — *Nov. 2008 - Apr. 2011*

- Course design, organization and supervision of students on digital measurement technology
- Custom design of a DIY 8-bit microcontroller kit and USB programmer

Publications

A unifying model to predict multiple object orienting behaviors in tethered flies — *bioRxiv*

Andreas Poehlmann, Sayan J. Soselisa, Lisa M. Fenk, Andrew D. Straw — *Jul. 2018*

bioRxiv doi: 10.1101/379651

Asymmetric Processing of Visual Motion for Simultaneous Object and Background Responses — *Current Biology*

Lisa M. Fenk, Andreas Poehlmann, Andrew D. Straw — *Nov. 2014*

Current Biology, 24(24), 2913–2919. doi: 10.1016/j.cub.2014.10.042

FlyMAD: Rapid thermogenetic control of neuronal activity in freely walking Drosophila — *Nature Methods*

Daniel E. Bath, John Stowers, Dorothea Hörmann, Andreas Poehlmann, Barry J. Dickson, Andrew D. Straw — *May. 2014*

Nature methods, 11(7), 756–7622. doi: 10.1038/nmeth.2973

Unravelling the Rayleigh–Taylor instability by stabilization — *Journal of Fluid Mechanics*

Andreas Poehlmann, Reinhard Richter, Ingo Rehberg — *Oct. 2013*

Journal of Fluid Mechanics, 732, R3. doi: 10.1017/jfm.2013.424