

# Andreas Poehlmann

PHYSICIST · NEUROSCIENTIST · SOFTWARE ENGINEER

Current Residence: Vienna, Austria

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## Work Experience

### Bayer AG - Machine Learning Research

RESEARCH SCIENTIST

- Development of software enabling human-in-the-loop machine learning in digital pathology
- Creation of visualization and data-management tools for large tile based annotated image datasets

Berlin, Germany

Jul. 2020 - PRESENT

### loopbio gmbh

SOFTWARE ENGINEER

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

Vienna, Austria

Aug. 2017 - Apr. 2020

## Skills

**Programming** Python, JavaScript, C/C++

**Software Stack** Scientific Computing (Numpy, Scipy, Pandas, OpenCV), Web Development (Flask, SQLAlchemy)

**Sys-Admin / Dev-Ops** Linux, Ansible, Python Packaging, Pytest, CI/CD (Jenkins, GH Actions, Travis)

**Experiment Design** Realtime virtual reality control systems, Embedded system design

**Languages** German, English

## Education

### University of Vienna

DOCTORATE IN MOLECULAR BIOLOGY

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

Vienna, Austria

Apr. 2012 - Aug. 2017

### University of Bayreuth

DIPLOM IN PHYSICS

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

Bayreuth, Germany

May 2005 - Nov. 2011

## Research Experience

### University of Freiburg

SCIENTIFIC ASSISTANT

- 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

Freiburg, Germany

Feb. 2016 - Jul. 2017

### Research Institute of Molecular Pathology

RESEARCH ASSISTANT AND PHD STUDENT

- 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*

Vienna, Austria

Feb. 2012 - Feb. 2016

### Fraunhofer task force for ceramic composite materials

SCIENTIFIC ASSISTANT

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

Bayreuth, Germany

Jul. 2011 - Jan. 2012

### University of Bayreuth

SCIENTIFIC ASSISTANT AND DIPLOMA STUDENT

- 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

Bayreuth, Germany

May 2005 - Jul. 2011

# Volunteering

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## 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 student team for fluorescence spectroscopy experiment measuring beta-amyloid decay in microgravity
- Development of software running on embedded Linux arm pc 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

# Awards

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2019 **NASA Space Apps Challenge**, Global Finalist with 'MajorTom' satellite data visualization prototype

Vienna, Austria

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

Vienna, Austria

# Publications

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## 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), 756-762. 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

# Conferences

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## Freiburg Neural Circuits Symposium

Freiburg, Germany

PRESENTATION

Jun. 2015

Models of fly visual behavior

## 11th Göttingen Meeting of the German Neuroscience Society

Goettingen, Germany

POSTER: ANDREAS POEHLMANN, LISA M. FENK, ANDREW D. STRAW

Mar. 2015

How much *Drosophila* visual behavior is predicted by models with asymmetric motion responses?

## DPG Frühjahrstagung & Euromech Colloquium 526

Dresden, Germany

PRESENTATION

Mar. 2011

Measuring the onset of the Rayleigh-Taylor instability in rotating magnetic fields

# Teaching Experience

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## CAJAL Behavior of Neural Systems Course

Lisbon, Portugal

TEACHING ASSISTANT; CHAMPALIMAUD CENTRE FOR THE UNKNOWN

Jul. 2015 & Aug. 2016

- Course design and supervision on freely walking virtual reality for fruit flies
- Course design and supervision 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 for students on digital measurement technology
- Custom design of a DIY 8-bit microcontroller kit and USB programmer for teaching students