Federico M. **Barabas**

Postdoctoral researcher
Stockholm, Sweden
(+46) 72 566 0896 | fede.barabas@gmail.com | fedebarabas.github.io | fedebarabas | federico | fbarabas

Profile

- Unlocked large-scale and unbiased research of periodical structures in imaging. It allowed collaborators and the bioimage community to discover new mechanisms in the degeneration of neurons.
- Saved the laboratory thousands of dollars in instrument control software by developing a modular open-source alternative in Python. Currently in use in 5 experiments in 2 different laboratories by an interdisciplinary group of users.

Skills

Programming Python (Numpy, matplotlib, pandas, PyQt, device control libraries, multiprocessing), Linux, LaTeX, Git.
Statistics Probability distributions, parameter estimation, experiment design and hypothesis testing.
Optics Microscopy system design and construction. Fluorescence bioimaging beyond the diffraction limit.

Experience

Advanced Optical Bio-Imaging Lab, SciLifeLab *Stockholm, Sweden*
Postdoc researcher *2017 - PRESENT*
- Developing new methods for pushing the resolution limits of fluorescence microscopy.

Applied NanoPhysics Group, Bionanosciences Research Center *Buenos Aires, Argentina*
PhD candidate *2012 - 2017*
- Designed and built a localization fluorescence microscope, capable of acquiring images of nanometric resolution.
  - Software paper: https://doi.org/10.1063/1.4972392
  - Code repository: https://github.com/fedebarabas/tormenta.
- Headed the development of an analysis tool to automatically quantify the presence of nanometric structures in bioimaging.
  - Work paper: https://doi.org/10.1038/s41598-017-16280-x
  - Code repository: https://github.com/fedebarabas/ringfinder.

Dept. of NanoBiophotonics, Max Planck Institute for Biophysical Chemistry *Göttingen, Germany*
PhD candidate internship *2013*
- Trained in fluorescence super-resolution microscopy at the laboratory of Nobel laureate Stefan Hell.

Detection Technologies and Astroparticles Institute *Buenos Aires, Argentina*
Licenciate thesis *2011 - 2012*
- Determined the statistical counting efficiency of muon detectors for the upgrading of the Pierre Auger Observatory.

Education and courses

Stanford University *www.coursera.org*
Machine Learning Course *Nov 2017 - Jan 2018*

Buenos Aires University *Buenos Aires, Argentina*
PhD in Physical Sciences *2012 - 2017*

Buenos Aires University *Buenos Aires, Argentina*
Licenciatura in Physical Sciences *2006 - 2012*

Teaching

Physics Dept., Faculty of Exact and Natural Sciences, Buenos Aires University *Buenos Aires, Argentina*
Graduated advanced laboratory teaching assistant *2015 - 2017*

Science and Technology School, San Martín National University *Buenos Aires, Argentina*

Graduated teaching assistant *2012 - 2013*

Management

Optical Society of America Student Chapter *Buenos Aires University*

President *2015 - 2017*

- 2-fold increase in the amount of active members through the organization of recruitment activities.
- Wrote winning grant applications that led to a 50% growth in the Chapter resources.
- Launched a new activity where young researchers presented their work to spark collaborations and inspire students into optics.

Optics and Photophysics Student National Meeting *Buenos Aires, Argentina*

Organizing committee member *2013*

- Organized the meeting schedule.
- Designed the book of presentation abstracts.
- Logistic support during the National Meeting talks.

Languages and interests

Languages Spanish (native), English (fluent), Swedish (basic), Italian (basic).

Interests bike touring, guitar, space and astronomy, reddit, Seinfeld.