Federico M. **Barabas**

Postdoctoral researcher

Stockholm, Sweden

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Profile

- Wrote an open-source analysis tool that enabled automated and unbiased quantification of structures in biological images. It allowed collaborators to discover new mechanisms in the degeneration of neurons.
- Developed a modular instrument control software and GUI for optical microscopy. 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.
Optics Microscopy system design and construction. Fluorescence bioimaging beyond the diffraction limit.
Statistics Probability distributions, parameter estimation, experiment design and hypothesis testing.

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.
- Developed an image analysis tool to automatically quantify a periodical structure currently under study within the community.
  - 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 Nobel laureate Stefan Hell's laboratory.

Detection Technologies and Astroparticles Institute *Buenos Aires, Argentina*

Licenciate thesis *2011 - 2012*

- Studied the statistical counting efficiency of muon detectors for the Pierre Auger Observatory.

Education and courses

deeplearning.ai *www.coursera.org*

Deep Learning Specialization *Feb 2018 - PRESENT*

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*

- Launched a new activity where young researchers presented their work to spark collaborations and inspire students into optics.
- Recruitment activities organization: during my term, the number of members doubled.
- Chapter resources administration and writing of grant applications.

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.