MIGUEL FERNANDES, PHD

SCIENTIST WITH THE GOAL TO EMPOWER PEOPLE THROUGH KNOWLEDGE

António Miguel Fernandes

amgfernandes@gmail.com
LinkedIn/amgfernandes
Github/amgfernandes

Würmstraße. 11,
82166 Gräfelfing,
Germany
0049-1523-7014457

LANGUAGES

English (fluent)

German (fluent)

Portuguese (native)

French (basic)

SKILLS

Machine learning

Genetics

Neuroscience

COMPETENCIES

Communication

Analytical thinking

Problem solving

PROGRAMMING

Python (>5 years)

R

Bash

SQL

I am an experienced scientist fascinated by the analysis of data using **molecular** and **machine learning** methods to extract valuable insights and create knowledge.

- Self-taught programmer, capable of gaining actionable knowledge from complex data.
- Committed team player with strong leadership skills, who thrives on cross-functional teams.
- Natural communicator with strong ability to distill complex information to crucial points and present to broad audiences.

PROFESSIONAL EXPERIENCE

RESEARCHER / DATA SCIENTIST — NOV 2020-PRESENT

• I am developing computational approaches (e.g. using dimensionality reduction and clustering) for the analysis and visualization of **transcriptomic datasets** (single-cell RNA sequencing) to find **biomarkers** for particular classes of neuronal cells involved in visual perception.

• To reveal insights from multidimensional brain imaging data and behavioral recordings I am devising automatized and customized **machine learning approaches** (e.g. linear regression, logistic regression, K-means, and hierarchical clustering).

• To target neuronal cells, I am developing new transgenic sensors and actuators using **molecular biology tools** (e.g. CRISPR-Cas9 genome editing, intersectional genetic approaches).

• I am establishing and maintaining **advanced imaging technologies** (2P Optogenetics by Computer-Generated Holography) to selectively manipulate cellular function.

RESEARCH SCIENTIST — SEP 2013-OCT 2020

Max Planck of Neurobiology, Martinsried, Germany

• Employed diverse **machine Learning algorithms** to unstructured data.

• **Modelled and analyzed** behavioral and imaging data using supervised and unsupervised learning algorithms (e.g. linear regression, K-means, and hierarchical clustering).

• Performed high-resolution behavioral tracking. Video recording and object tracking using **Computer Vision** (OpenCV).

• Analyzed of 3D biological data. Max Planck **high-performance computing** facility (Linux clusters). Bash, CMTK, ANTs, and Image J Macro scripts.

• Imaged neuronal activity combined with Holographic optogenetic stimulation (2P Microscopy).

PHD IN NEUROSCIENCE — APR 2009 - AUG 2013

Hans-Grisebach Award: Outstanding PhD dissertation in biochemistry and molecular biology.

• Performed Confocal **imaging** of *in vivo* and *in vitro* brain samples.

• Developed **molecular genetics and analysis tools** for neural circuit dissection: pharmacogenetic ablation of cells, large genomic and RNA data analysis, DNA/RNA handling, PCR, and molecular cloning.

• Constructed behavioral setups and analyzed **time-series data**.

• Performed **Immunohistochemistry** and **Fluorescent *in situ* Hybridization** techniques.

ACADEMIC EDUCATION

PHD IN NEUROSCIENCE APR 2009 - AUG 2013

University of Freiburg, Germany

LICENTIATE IN BIOLOGY (EQUIVALENT TO MASTER'S DEGREE) SEP 2003 - SEP 2009

University of Porto, Portugal

SELECTED COURSES

Machine Learning with Python - Coursera

Databases and SQL for Data Science - Coursera

KEY PUBLICATIONS

Kölsch et al. bioRxiv, 2020 / Mearns et al. Current Biology, 2020 / Fernandes et al. bioRxiv, 2019 (Lead author) / Kunst et al. Neuron, 2019 / Förster et al. Scientific Reports, 2017 / Fernandes et al. PLoS ONE, 2013 (Lead author) / Fernandes et al. Current Biology, 2012 (Lead author)

PRESENTATIONS

Talks

Champalimaud Research Symposium (Lisbon, Portugal), FENS Satellite Symposium (Berlin, Germany),

SPP1926 Annual Meeting (Naurod, Germany) and DFG-Forschergruppe 1279 Meeting (Chorin, Germany).

Conferences (with poster presentation)

SFB 870 Retreat (Munich, Germany), 11th FENS Meeting, Berlin, Germany, MAPS Conference (Strasbourg ,

France), 10th International Conference on Zebra sh (Bethesda, USA) and 1st Champalimaud Neuroscience

Symposium (Lisbon, Portugal)

TEACHING

Zebrafish course, TUM PhD program 'Life Science and Technology' (2019), Molecular Neurobiology course

(GSN-LMU University, 2017 and 2018) and Workshop Instructor (TUM University, 2015).

POSTDOC ASSOCIATION 2014 – PRESENT

Representative

The postdoctoral association represents all postdoctoral fellows of the Max Planck of Neurobiology. Organized scientific and social events.

INTERNATIONAL EXPERIENCE

Visiting researcher: National Institute of Genetics, Japan, May 2014. NIG Collaboration Grant-NIG-JOINT (2014-A).

Visiting Researcher: Unit on Behavioral Neurogenetics, NICHD, USA, Jan 2011 – Feb 2011

HOBBIES AND VOLUNTEER EXPERIENCE

Football, martial arts, biking, cooking and reading.

Collaborator: Open Neuroscience. Network promoting open source tools for Neuroscience

(www.open-neuroscience.com)