Hamed Shabani

Ph.D. Student, Neural Information Processing program,
Graduate Training Center of Neuroscience, Tübingen,
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Education

2017–2021 **Ph.D. in Computational Neuroscience**, *University of Tübingen*.
Dissertation *Classifying retinal ganglion cells for bionic vision*
supervisor Dr. Daniel Rathbun, Prof. Eberhard Zrenner (Collaboration with UNSW, Sydney)
tasks Collected electrophysiology data of mouse retina and analyzed in Python and Matlab.

2013–2016 **M.S. in Biomedical Engineering**, *Shahed University*, Tehran.
Dissertation *EEG signals chaotic behavior analysis in order to detect drowsiness*
supervisor Dr. Mohammad Mikaili
tasks Collected EEG data of human subjects and analysed with Matlab.

2009–2011 **B.S. in Electrical Engineering**, *Bahonar Technical College of Shiraz*.
Final poject *Matlab compatible Electrocardiogram*

Research Experience

2019-2020 **DAAD Joint Research Collaboration**, *University of New South Wales* , Sydney.
- Project 1: Comparing direct and indirect activation of retina ganglion cells in patch-clamp versus extracellular recording
- Project 2: Noise correlation analysis of retina patch-clamp recordings for electrical stimulation

advisors Dr. Mohit Shivdasani, Dr. Rathbun, Dr. Hosseinzadeh
tasks Developed Matlab codes for analyzing patch clamp recordings.

2015–2017 **Research Assistant**, *Brain Engineering Center (IPM)*, Tehran.
- Project 1: Response variability in visual cortex
- Project 2: Encoding pleasant and unpleasant expression of the architectural window shapes

advisor Dr. Reza Lashgari (Collaboration with Alonso lab at State University of New York)
tasks Analyzed human EEG and e-phys data recorded from non-human primates.

Teaching Experience

SS 2020 Mentoring Master students at HTWK Leipzig. Define, guide, and evaluation of the final projects of Pattern recognition course.

SS 2019 Mentoring Medtech Master students in Implantology course, Tübingen.

Workshops and Abstracts

Aug 2-21, 2021 **Online summer school**, *NeuroMatch Academy Deep Learning course*, (Perspective trainee).

Oct 12-14, 2020 **Online workshop**, *UCL Neuropixels Course*,

March 13, 2019 **Workshop**, *Research Funding and Grant Writing*, DZNE Tübingen.

Dec 28, 2016 **Workshop**, *Spike data analysis*, Neuroscience Research Center,Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Dec 13-14, 2019 **Oral presentation**, MEA-based classification of retinal ganglion cells for bionic vision, Shabani H, Sadeghi M, Hosseinzadeh M, Zrenner E, Rathbun D. *Artificial vision Conference*, Aachen, Germany.

Sep 17-22, 2019 **Poster presentation**, Multi-Electrode recording for classification of retinal ganglion cells for bionic vision, Shabani H, Sadeghi M, Hosseinzadeh Z Zrenner E Rathbun D., *Bernstein Conference*, Berlin, Germany.

April 27, 2019 **Poster presentation**, *Multi-Electrode recording for classification of retinal ganglion cells for bionic vision*, Shabani H, Sadeghi M, Hosseinzadeh Z Zrenner E Rathbun D., Arvo Conference, Vancouver, Canada.

March 7, 2018 **Poster presentation**, New Horizons in Vision and Hearing Research symposium, Physiological Classification of Mouse Retinal Ganglion Cells for Retinal Implants, Institute for Ophthalmic Research, Tuebingen, Germany.

Selected Talks

Dec 13, 2019 "Physiological classification of mouse retinal ganglion cells for bionic vision", Artificial Vision Conference, Aachen, Germany.

Aug 17, 2016 "Which model to use for cortical spiking neurons?", Brain Engineering Center, IPM.

Attended Courses at University of Tübingen

WS, 2019 Machine Learning

WS, 2019 Sensory System - Visual system

WS, 2018 Sensory Systems II

WS, 2018 Neural Experimental Techniques

SS, 2018 Advanced Statistics

SS, 2018 From Molecules to Circuits - The Retina as a Model System

Computational and practical Skills

Python, MATLAB (Simulink, Keras, ScikitLearn)

Large scale neural data analysis, Computational modeling of biological systems.

Electrophysiology, Spike sorting, Neural stimulation, Retina dissection, EEG data collection.

Experience with low noise biomedical amplifiers, Ardoino and Microcontrollers.

Languages

English, German (B1), Persian (native).

Publications in preparation

[1] **Shabani H**, Zrenner E, Rathbun D, Hosseinzadeh Z. Classi-fication of pseudocalcium visual responses from mouse retinal ganglion cells. Submitted.

[2] **Shabani H**, Zrenner E, Rathbun D, Hosseinzadeh Z. Characterizing electrical input filters of ganglion cell types in mouse retina. In prep.

Publications

[1] Naghibi Rad P, Shahroudi AA, **Shabani H**, and Lashgari R. Encoding Pleasant and Unpleasant Expression of the Architectural Window Shapes: An ERP Study. *Frontiers in Behavioral Neuroscience*, 13:186, 2019.

[2] Rathbun DL, Ghorbani N, **Shabani H**, Zrenner E, and Hosseinzadeh Z. Spike-triggered average electrical stimuli as input filters for bionic vision—a perspective. *Journal of Neural Engineering*, 15(6):063002, 2018.

[3] **Shabani H**, Mikaili M, and Noori SMR. Assessment of recurrence quantification analysis (RQA) of EEG for development of a novel drowsiness detection system. *Biomedical Engineering Letters*, 6(3):196–204, 2016.

References

Prof. Eberhart Zrenner
- University of Tuebingen
- ezrenner@uni-tuebingen.de

Dr.Daniel Rathbun
- Henry Ford eye Hospital
- DRathbu2@hfhs.org

Dr.Zohreh Hosseinzadeh
- University of Leipzig
- Zohreh.Hosseinzadeh@medizin.uni-leipzig.de

Dr. Mohammad Mikaili
- Shahed University
- mikaili@shahed.ac.ir