Cem Uran

Computational Neuroscientist

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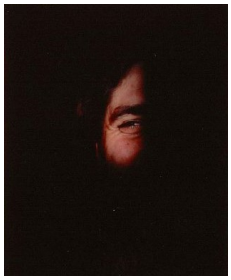

Research interests

Computational Neuroscience, Predictive Processing, Biological Neural Networks

Education

2012 – 2016 **Master of Science in Computer Science**, *Faculty of Engineering*, University of Freiburg, Major in Cognitive Technical Systems.

2010 **Exchange Semester**, *Faculty of Engineering*, City University of Hong Kong, Hong Kong.

2007 – 2011 **Bachelor of Science in Electrical & Electronics Engineering**, *Faculty of Engineering*, Bilkent University, Ankara, Turkey.

Experience

October, 2016 – Today **PhD Candidate**, Vinck Lab, Ernst Strüngmann Institute, Frankfurt.
- Computational methods for large-scale electrophysiology data and closed-loop feedback stimuliaton
- Supervisor: Dr. Martin Vinck

April, 2016 – October, 2016 **Research assistant**, Optophysiology Lab, Faculty of Biology, University of Freiburg.
- Data acquisition, visualization, and analysis for neural data
- Neural coding: Firing pattern classification and spike statistics for behavioral paradigms in rodents

November, 2015 – June, 2016 **Research assistant**, Bernstein Center Freiburg, Faculty of Biology, University of Freiburg.

Together with my Master Thesis, I have been working on:
- Developing an open-source python package: locMEA - `https://github.com/uranc/locmea`
- Modeling of neuronal activity, morphology, and spatio-temporal dynamics
- Solving non-linear optimization problems using CasADi framework

June, 2014 – January, 2015 **Research assistant**, Bernstein Center Freiburg, Faculty of Biology, University of Freiburg.

Neuronal activity reconstruction for MEA recordings (Neuroseeker project)
- L1 based sparse signal reconstruction methods
- Source localization methods, hyperparameter optimization

Feb, 2012 – Sep, 2012 **Technical and medical assistant**, Child Neurology Clinic, Izmir, Turkey.
- Maintenance of EEG data acquisition
- Medical assistance for EEG recordings

Academic Publications

Journal Articles

Title *Predictive coding of natural images by V1 activity revealed by self-supervised deep neural networks* Cem Uran, Alina Peter, Andreea Lazar, William Barnes, Johanna Klon-Lipok, Katharine A Shapcott, Rasmus Roese, Pascal Fries, Wolf Singer, Martin Vinck. bioRxiv. 2020.

Title *A distinct class of bursting neurons with strong gamma synchronization and stimulus selectivity in monkey V1* Irene Onorato, Sergio Neuenschwander, Jennifer Hoy, Bruss Lima, Katia-Simone Rocha, Ana Clara Broggini, Cem Uran, Georgios Spyropoulos, Johanna Klon-Lipok, Thilo Womelsdorf, Pascal Fries, Cristopher Niell, Wolf Singer, Martin Vinck. Neuron. 2020.

Title *Surface color and predictability determine contextual modulation of V1 firing and gamma oscillations* Alina Peter, Cem Uran, Johanna Klon-Lipok, Rasmus Roese, Sylvia van Stijn, William Barnes, Jarrod R Dowdall, Wolf Singer, Pascal Fries, Martin Vinck. Elife. 2019.

Title *A functional gradient in the rodent prefrontal cortex supports behavioral inhibition* Stefanie Hardung, Robert Epple, Zoe Jäckel, David Eriksson, Cem Uran, Verena Senn, Lihi Gibor, Ofer Yizhar, Ilka Diester. Current Biology. 2017.

Master's Thesis

Title *Source localization for high density micro-electrode array recordings*

Supervisor Professor Stefan Rotter & Dr. Olaf Ronneberger

Bachelor's Thesis

Title *An innovative touch-free "Smart Faucet" for critical hygiene applications*

Supervisor Dr. Tarık Reyhan

Scientific and Technical Skills

Scientific Numerical Optimization, Machine Learning, Linear Algebra, Mathematical Modeling

Technical Neural Signal Processing, Data Analysis, Cluster Computing

Academic Reproducible Research, Scientific Programming

Computer skills

Fluent PYTHON, MATLAB, C++, LaTeX

Intermediate BASH, C, Lua, Java, Basic, Assembly

Software NEURON, CasADi, EEGLAB, Fieldtrip, OpenMP

Hardware Nihon Kohden Neurofax EEG, Epoc Emotiv EEG, Microcontrollers, FPGA

Languages

Native Turkish

Fluent English *TOEFL: 105*

Intermediate German *B1*

Projects and Independent Coursework

Prof.M.Diehl	Numerical optimal control of membrane potential dynamics	*MATLAB*
Prof.M.Riedmiller	Non-invasive brain machine interfaces: Event-related negativity based learning	*Python*
Dr.M.Lauer	Deep hierarchical networks for face, gesture, car detection and recognition	*Lua*
Prof.L.Konieczny	Language processing: Simple recurrent networks to learn to generate sentences	*R*
Prof.T.Brox	TV-Based multi-label image segmentation	*C++*
Prof.Ö.Mörgül	Neural networks for learning and pattern recognition	*MATLAB*
Prof.M.Diehl	Numerical Optimal Control with DAEs	
Prof. Stieglitz	Fundamentals of Electrical Stimulation	
Prof. Gerstner	Neuronal Dynamics (Online)	