Akif Erdem Sağtekin

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EDUCATION

09.2022 - 06.2024 Tübingen	**M.Sc in Computational Neuroscience** Tübingen University
09.2018 - 06.2022 Istanbul	**B.Sc in Electronics and Communication Engineering** Istanbul Technical University, GPA: 3.55 **Thesis:** "A computational model for perceptual decision-making (PDM) mechanism considering the cortical laminar structure" | PI: Neslihan Serap Şengör

RESEARCH EXPERIENCE

08.2023 – 10.2023 Tübingen	**Essay Rotation** Peter Dayan Lab • Writing a literature review on reinforcement learning in biological neural networks. • Policy-gradient methods, temporal-difference framework and actor-critic learning have been studied. Their relevance with three-factor learning is investigated.
09.2022 - 09.2023 Tübingen	**Research Assistant** Self-organization and Optimality in Neuronal Networks (PI: Anna Levina) • Trained SNNs for different tasks using surrogate gradient descent. • The interplay between co-tuning and anti-tuning mechanisms for novel stimuli detection and input selectivity has been studied. • Presented the results in Bernstein Conference 2023.
04.2022 - 02.2023 Istanbul	**Undergraduate Researcher** • Depolarization phenomena under shunting effects is studied. • Compared Hodgkin-Huxley, Izhikevich, AdEx, and CAdEx single neuron models with our proposed model.
10.2019 - 06.2022 Istanbul Link	**Undergraduate Researcher** Neuroscience Modelling and Research Group (PI: Neslihan Serap Sengor) • Implemented "Simple Model of Spiking Neurons" paper (Izhikevich, 2003) in Brian2. • The cortical laminar interactions in perceptual-decision making mechanism have been modeled and analyzied as bachelor's thesis.
09.2020 – 06.2021 Istanbul	**Undergraduate Researcher** ITU AI Center (PI: Nazim Kemal Ure) • Worked on sequential Kalman filters.

TEACHING EXPERIENCE

08.2023 - 03.2024 Tübingen	**Teaching Assistant** • Neural Dynamics (Textbooks: Neuronal Dynamics, Theoretical Neuroscience) • Neurophysiology
10.2021 - 01.2022 Istanbul	**Teaching Assistant** • Artificial Neural Networks (Textbook: Neural Networks and Learning Machines, Haykin)

OTHER EXPERIENCE

09.2021 – 10.2021 Istanbul	**Machine Learning Intern** TUBITAK • Used Apache Spark ML tool to implement ML algorithms for a big-data project.
06.2021 – 07.2021 Certificate	**Interactive Student** NeuroMatch Academy - Summer School • Completed the computational neuroscience curriculum. • Presented a project about the relationship between timescales and hierarchy in the human brain.

PUBLICATIONS & POSTER PRESENTATIONS

[1] Chizhov, A.V., Amakhin, D.V., **Sagtekin, A.E.** et al. Single-compartment model of a pyramidal neuron, fitted to recordings with current and conductance injection. Biol Cybern (2023). https://doi.org/10.1007/s00422-023-00976-7

[2] **Sagtekin AE**, Giannakakis E, Levina A. Emergent E/I anti-tuning and balance during surrogate gradient learning. Bernstein Conference (2023). https://doi.org/10.12751/nncn.bc2023.074

AWARDS AND HONORS

07.2022 - 07.2024	**DAAD Scholarship - ∼25.000€**

SKILLS

Programming:	Python (Brian2, PyTorch, TensorFlow), MATLAB, C++, C
Languages:	English (TOEFL: 95), German (A2), Turkish (Native)

LEADERSHIP & EXTRACURRICULAR ACTIVITIES

2023-24	**Student Representative for Computational Neuroscience MSc**
2023-24	**Founded a computational neuroscience journal club for MSc students**
2023-24	**Interviewed by DAAD (in German)**
Winter 2021-22 Curriculum	**Founded a computational neuroscience study group** Gave lectures from the textbook 'Theoretical Neuroscience' by Dayan and Abbott
Summer 2021-22	**Gave lectures in math and biology to high school students** ITU Volunteering Society - Another Way Project
Summer 2021-22 Link	**Presentation: The concept of modeling and using math to explain the brain** Talked about computational neuroscience in TURING, a public cultural organization.