Akif Erdem Sağtekin

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Education

Bachelor of Science | ***Electronics and Communication Engineering*** 2018 – 2022
Istanbul Technical University | GPA: 3.51 Istanbul, Turkey

High School Diploma | ***Natural Sciences, Mathematics*** 2014 – 2018
Çapa Science High School Istanbul, Turkey

BILSEM 2010 – 2014
A government establishment that helps highly gifted students develop their talents. Denizli, Turkey
Graduation Project: Published a book that contains simple intelligence questions.

Work Experiences

Undergraduate Researcher 10.2019 – Present
ITU SIMMAG Lab Istanbul, Turkey

- Worked on spiking neuron models (LIF, Izhikevich) and nonlinear dynamics.
- Re-implemented the simple cortex model in "Simple Model of Spiking Neurons" paper by E. M. Izhikevich.
- Modeled the multilaminar structure of the cortical microcircuit.
- Currently working on my bachelor thesis: "Modeling perceptual decision-making mechanism considering the multilayered structure of the cortex"

Student Assistant 10.2021 - 01.2022
Artificial Neural Networks Course Istanbul, Turkey

- Helped senior students with their assignments for the ANN course.
- Gave a tutorial lecture about the coding of multilayer perceptron (MLP) algorithm without using any AI libraries.

Machine Learning Intern 09.2021 – 10.2021
TUBITAK - BILGEM Istanbul, Turkey

- Worked on the "Improving the Detection Capacity of Turkish Customs Enforcement" project, the highest-budget governmental big data project in Turkey.
- Used Apache Spark/Spark ML, Apache Hive, Apache HBase, Apache Airflow, and built a system for integrating these services.

Undergraduate Researcher 09.2020 – 06.2021
ITU AI Center (held in cooperation with HAVELSAN) Istanbul, Turkey

- Developed a novel visual-inertial odometry algorithm for swarm drones: cooperative Kalman filter.
- Simulated the developed algorithm in ROS and AirSim environments.
- Also worked on AI-based visual-inertial odometry, SLAM, and segmentation problems.

Other Experiences

Interactive Student Summer 2020-21
NeuroMatch Academy - Summer School Certificate

- Learned about rate models, stochastic processes, etc.

Participant Fall 2020-21
Inzva - AI and Algorithm Community

- Attended a semester-long algorithm study group and enhanced my coding skills.

Fellow Fall & Spring 2019-20
The Hamdi Ulukaya Initiative Website

- 25 fellows are selected amongst approximately 50,000 applicants to join an entrepreneurship program at New York University (held online due to coronavirus).
- Acquired a comprehensive education from Turkish-American entrepreneurs and investors.

Relevant Projects

Modeling the PDM mechanism with selective inhibitory neurons Spring 2021-22
SIMMAG, Istanbul Technical University

Modeling the cortical laminar structure using Izhikevich neurons Fall 2021-22
SIMMAG, Istanbul Technical University

Comparing the ML algorithms for motor imagery classification Fall 2021-22
Machine Learning Course, Istanbul Technical University

Relationship between time-scales and hierarchy in ECoG data Summer 2020-21
Neuromatch, International Summer School

Deep Q-Network for inverse pendulum problem in PyTorch Fall 2020-21
Artificial Neural Networks Course, Istanbul Technical University

Extracurricular Activities

Gave lectures in math and biology to high school students weekly. Fall & Spring 2021-22
ITU Volunteering Society - Another Way Project

Presentation: The concept of modeling and using math to explain the brain Fall 2021-22
Talked about computational neuroscience in TURING. Link

Helped out the foundation of a youth platform: Goodness of Pages Fall 2020-21
To provide financial support for families in need, more than 60 members read their books to reach their daily page targets.

Assistant organizer of re/upcycling electronic wastes workshops for kids Spring 2019-20
Organized events for Galatasaraylilar Society and Besiktas Municipality as PULSEC.

Relevant Literature Study

Relevant Books:

- Principles of Neural Science (E. Kandel et al.) -Chapters read: [1- 2], [4-8], [12- 13], [33-34].
- Dynamical Systems in Neuroscience (E. M. Izhikevich) -Chapters read: [1-3], [6-7].
- Nonlinear Dynamics and Chaos (S. H. Strogatz) -Chapters read: [1-7].
- Networks of the Brain (Olaf Sporns) -Chapters read: [1-9].
- Cognitive Neuroscience (M. Gazzaniga et al.) -Chapters read: [1-11].

Relevant Coursework:

- Artificial Neural Networks
- Introduction to Optimization
- Machine Learning for Signal Processing
- Digital Signal Processing

Skills

Programming Skills	Python, Matlab, Brian, PyTorch, MNE.
Also Know	TensorFlow, C++, C, ARM Assembly, ROS.
Languages	English (TOEFL: 95), German (A2), Turkish (Native).

Hobbies

Electric Guitar	Have been playing for two years.
Caving	Explored different caves around Turkey with the ITU Speleology Society.