

GÖRKEM AKGÜL

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EDUCATION

USKUDAR UNIVERSITY

Bachelor of Science in Molecular Biology and Genetics (2019 - 2023)

GPA: 3.79

Graduated with **high honors** and **ranked 1st** in the department.

Thesis Title: Design Of Neuron-Specific Lentiviral Vectors And Investigation Of Gene Therapy Applications In Spinal Muscular Atrophy Disease - Supervisor: [Cihan TASTAN](#) - Thesis Poster: [DOI](#)

Bachelor of Engineering in Software Engineering - Double Major (2020 - 2024)

GPA: 3.88

Ongoing Graduation Project: Investigation of Graph-based Deep Learning Approaches for Brain Parcellation - Co-Supervisors: [Nico SCHERF](#) and [Kristin BENLİ](#) in collaboration with MPICBS

RESEARCH EXPERIENCE

Intern/Guest Researcher at Max Planck Institute for Human Cognitive and Brain Sciences, Germany

July 2022 – October 2022 (via Erasmus+) / October 2022 – Present (Remote)

Neural Data Science and Statistical Computing Group

- Conducted comparative analysis of dimensionality reduction techniques on fMRI data from the Human Connectome Project.
- Developed [Neural Ensemble Segmentation Suite](#). In the final stages of development, NESS is a tool merging Convolutional Neural Networks and Vision Transformers for semantic segmentation tasks, particularly analyzing fluorescence images of neurons. Anticipated release: Early 2024, with a pre-print.
- Designed and implemented the lab's official website using Jekyll.
- Currently engaged in my second thesis work at the intersection of Brain Parcellation, Geometric Deep Learning, and Brain Alignment.

Supervisor: [Nico SCHERF](#)

Summer Research Intern at the UCL Centre for Medical Image Computing at the University College London

July 2023 - November 2023

Progression Of Neurodegenerative Disease (POND) Group

- Developed predictive models for Alzheimer's Disease (AD) using diverse biomarkers, including MRI, PET, DTI, genetics, and cognitive tests. Employed ensemble methods with tree-based algorithms to forecast critical AD biomarkers: ADAS-Cog13 score, ventricle volume, and clinical status.
- Analyzed the significance of predictors to evaluate their impact on the application of predictive modeling in the onset of AD within clinical trials.

Supervisor: [Neil OXTOPY](#) and [Maitrei KOHLI](#)

Guest Researcher at Transgenic Cell Technologies and Epigenetics Application and Research Center at the Uskudar University

January 2021 – June 2023

- Played a significant role in the preparation of project proposals for funding from prestigious institutions such as [TUBITAK](#) and [TUSEB](#). This effort resulted in the full funding of the project titled "**In Vitro and Ex Vitro Study of New Generation CRISPR-Prime Editing that targets Exon 7/Intron 7 of SMN2 Gene Regulation in Spinal Muscular Atrophy (SMA) and Approaches in SMN1 Encoding Motor Neuron Cell Specific Neural Lentivirus**" by TUSEB.
- Contributed to the development of neuron-specific lentiviral vectors for CRISPR-based therapies, focusing on neurological rare diseases, particularly Spinal Muscular Atrophy (SMA).
- Helped the development of innovative therapeutic approaches for treating Retinitis Pigmentosa, utilizing XNA-based antisense oligonucleotides and lentiviral vectors.

Supervisor: [Cihan TASTAN](#)

PATENTS

- CRISPR-PE System For Retinol Dehydrogenase 12 (Rdh12) Gene Mutations For Use In The Treatment Of Retinitis Pigmentosa (RP) Disease (pending, No: [TR2021022284A2](#) / [WO2023129095A1](#))
- Xeno Nucleic Acid Antisense-Oligonucleotide (XNA-ASO) Sequences for the Genetic Treatment of USH2A Induced Retinitis Pigmentosa Disease (pending, No: [TR2022001648A2](#) / [WO2023154026A1](#))
- Neural Lentiviral Vector Containing The Functional Abca4 Gene For Use In The Treatment Of Retinitis Pigmentosa (RP) Disease (pending, No: [TR2022000448A2](#))
- Neurotrophic Factor And Optogenetic System-Based Lentiviral System For Use In Retinal Diseases (pending, No: [TR2022021763A2](#))
- Methods for the Treatment of Spinal Muscular Atrophy (pending, No: [TR2021018884A2](#))

INDUSTRY EXPERIENCE

Junior Intern Developer at OPTIIM

September 2016 – June 2017

- As a high school student, worked part-time as a web developer, proficiently utilizing HTML, JavaScript, jQuery, and CSS to create websites for Project Portfolio Planning and Resource Management.
- Collaborated with test engineers to perform load testing and service virtualization, gaining valuable experience in quality assurance and software testing methodologies.

HONORS AND AWARDS

Departmental Excellence Award for 1st Place Ranking

June 2023

Erasmus+ Student Mobility Grant by the European Commission

June 2022

Ranked 5th in Erasmus score based on GPA and English Test among all Bachelor's and Master's applicants.

SKILLS

Programming/Computing Skills: C#, Java, Python, MATLAB, HTML, LaTeX, CSS, JavaScript, TensorFlow, scikit-learn, PyTorch, OpenCV, ImageJ/Fiji, BioRender

Biological Research Techniques: PCR, Western Blot, Immunohistochemistry, Sanger, BLAST, Viral Vector Design (Lentiviral), Apoptosis Quantitation, Primer Design (Benchling), CRISPR System Design

ADDITIONAL COURSES AND CERTIFICATIONS

- “**BrainX: Cellular Mechanisms of Brain Function**”, Duration: 8 weeks, **EPFL**, Platform: Edx, [Certificate](#).
- “**Multi-BrainX: The Multi-scale brain**”, Duration: 7 weeks, **EPFL**, Platform: Edx, [Certificate](#).
- “**Optimization: principles and algorithms - Linear optimization**”, Duration: 5 weeks, **EPFL**, Platform: Edx, [Certificate](#).
- “**Optimization: principles and algorithms – Network and discrete optimization**”, Duration: 5 weeks, **EPFL**, Platform: Edx, [Certificate](#).
- “**Optimization: principles and algorithms – Unconstrained nonlinear optimization**”, Duration: 6 weeks, **EPFL**, Platform: Edx, [Certificate](#).
- “**Fundamentals of Biomedical Imaging: Magnetic Resonance Imaging (MRI)**”, Duration: 6 weeks, **EPFL**, Platform: Edx, [Certificate](#).
- “**Image Processing and Analysis for Life Scientists**”, Duration: 7 weeks, **EPFL**, Platform: Edx, [Certificate](#).
- “**Probability - The Science of Uncertainty and Data**”, Duration: 16 weeks, **MIT**, Platform: Edx, [Certificate](#).
- “**Digital Signal Processing Specialization**”, Duration: 14 weeks, **EPFL**, Platform: Coursera, [Certificate](#).
- “**Computational Neuroscience**”, Duration: 8 weeks, **University of Washington**, Platform: Coursera, [Certificate](#).
- “**Neuroscience and Neuroimaging Specialization**”, Duration: 16 weeks, **Johns Hopkins University**, Platform: Coursera, [Certificate](#).

- “**Practical Data Science with MATLAB Specialization**”, Duration: 18 weeks, *Mathworks*, Platform: Coursera, [Certificate](#).
- “**Machine Learning**”, Duration: 11 weeks, *Stanford University*, Platform: Coursera, [Certificate](#).
- “**IBM Machine Learning Specialization**”, Duration: 22 weeks, *IBM*, Platform: Coursera, [Certificate](#).
- “**Deep Learning Specialization**”, Duration: 17 weeks, *DeepLearning.AI*, Platform: Coursera, [Certificate](#).
- “**DeepLearning.AI TensorFlow Developer Specialization**”, Duration: 16 weeks, *DeepLearning.AI*, Platform: Coursera, [Certificate](#).
- “**TensorFlow: Advanced Techniques Specialization**”, Duration: 16 weeks, *DeepLearning.AI*, Platform: Coursera, [Certificate](#).
- “**Probabilistic Deep Learning with TensorFlow 2**”, Duration: 5 weeks, *Imperial College London*, Platform: Coursera, [Certificate](#).
- “**Brain Science and Neuroscience: The Science of the Future**”, Summer School for High School Students, *Kadir Has University*, [Certificate](#).
- “**Synapses, Neurons and Brains**”, Duration: 10 weeks, *The Hebrew University of Jerusalem*, Platform: Coursera, [Certificate](#).
- “**Medical Neuroscience**”, Duration: 13 weeks, *Duke University*, Platform: Coursera, [Certificate](#).
- “**Anatomy: Human Neuroanatomy**”, Duration: 7 weeks, *Michigan University*, Platform: Coursera, [Certificate](#).
- “**Circadian clocks: how rhythms structure life**”, Duration: 6 weeks, *LMU Munich*, Platform: Coursera, [Certificate](#).
- “**Sleep: Neurobiology, Medicine, and Society**”, Duration: 12 weeks, *University of Michigan*, Platform: Coursera, [Certificate](#).
- “**Visual Perception and Brain**”, Duration: 5 weeks, *Duke University*, Platform: Coursera, [Certificate](#).
- “**Music as Biology: What We Like to Hear and Why**”, Duration: 6 weeks, *Duke University*, Platform: Coursera, [Certificate](#).