

GÖRKEM AKGÜL

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EDUCATION

BERNSTEIN CENTER FOR COMPUTATIONAL NEUROSCIENCE BERLIN

Master of Science in Computational Neuroscience (2024–2027) **GPA: 1.7/5.0**

Joint degree program offered by Humboldt-Universität zu Berlin, Charité Universitätsmedizin Berlin and Technische Universität Berlin, organized by the BCCN Berlin.

Advanced Coursework: Stochastic Processes in Neuroscience, Stochastic Modelling in Neuroscience, Models of Biological Neural Networks.

USKUDAR UNIVERSITY *Double Major*

Bachelor of Science in Software Engineering (2020–2024) **GPA: 3.83/4.0**

Highlighted Coursework: Theoretical and Computational Neuroscience, Image Processing, Data Science, Artificial Intelligence and Applications

Thesis Title: Segmentation of Brain Tumor from MRI Images with Deep Convolutional Neural Networks – **Supervisor:** [Kristin Benli](#).

Bachelor of Science in Molecular Biology and Genetics (2019–2023) **GPA: 3.79/4.0**

Highlighted Coursework: Neurobiology, Neurodevelopment, Neurochemistry, Animal Behavior.

Thesis Title: Design of Neuron-Specific Lentiviral Vectors and Investigation of Gene Therapy Applications in Spinal Muscular Atrophy – **Supervisor:** [Cihan Tastan](#) – Thesis Poster: [DOI](#).

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

RESEARCH EXPERIENCE

BCCN LAB ROTATIONS

TITLE: Geometric Exploration of Learned Internal Representations in Vision Systems

August 2026 – October 2026

- Extended my prior work at the Max Planck Institute on the geometric analysis of internal representations in vision models and the human visual cortex, implementing and evaluating the approach on a new dataset.

Supervisor: [Nico Scherf](#)

TITLE: Mechanistic Interpretability and Representation Alignment in Autoregressive Speech Language Models

January 2026 – August 2026

- Implemented mechanistic interpretability methods to probe syntactic and lexical circuitry in autoregressive speech-language models introduced by [Tuckute et al., 2025](#), using the ZeroSpeech dataset.
- Analyzed representation alignment using RSA, CKA, and voxel-wise encoding in the human auditory cortex. This work forms the basis of my Master's thesis.

Supervisor: [Greta Tuckute](#)

TITLE: Interpretability Analysis of Bilingual Brain-Informed Fine-Tuning in BERT

October 2025 – January 2026

- Investigated the mechanistic and representational effects of brain-informed fine-tuning in English and Chinese BERT models, extending [Negi et al. \(2025\)](#) using layer-wise RSA, logit-lens analysis, causal tracing, path patching, and structural probes.

Supervisor: [Fatma Deniz](#)

MAX PLANCK INSTITUTE FOR HUMAN COGNITIVE AND BRAIN SCIENCES

Neural Data Science and Statistical Computing Group

Research Assistant

(April 2025 – Present)

- **Project GEOLIPS:** Investigating the geometry and representational structure of human fMRI responses and large-scale vision models (CLIP, SLIP, DINO; trained with BYOL and related self-supervised learning schemes) using geometric metrics to quantify representational similarity and internal state-space structure.
- **Project BIOWIN:** Analyzed high-dimensional spectroscopic measurements analogous to fMRI data, clustering latent representations using classical methods, autoencoders, and variational autoencoders.

Guest Researcher

(October 2022 – September 2024)

- Continued collaborating remotely with the group, extending image-segmentation work on neuronal fluorescence images.
- Investigated functional and structural connectivity patterns in Human Connectome Project data using graph neural networks as part of my BSc Software Engineering graduation project.

Erasmus+ Research Intern

(July 2022 – October 2022)

- Implemented and compared vision transformers and convolutional neural networks, evaluating their performance and exploring techniques to enhance their effectiveness on biological segmentation tasks.

Supervisor: [Nico Scherf](#)

CENTRE FOR MEDICAL IMAGE COMPUTING, UNIVERSITY COLLEGE LONDON

Progression of Neurodegenerative Disease (POND) Group

Summer Research Intern

(July 2023 – November 2023)

- Developed tree-based ensemble models for Alzheimer's Disease (AD) using multimodal biomarkers, including MRI, PET, DTI, genetics, and cognitive tests, to predict key AD outcomes.
- Evaluated predictor importance to identify key biomarkers associated with AD progression in clinical trials.

Supervisors: [Neil Oxtoby](#) and [Maitrei Kohli](#)

TRANSGENIC CELL TECHNOLOGIES AND EPIGENETICS APPLICATION AND RE-SEARCH CENTER

Guest Researcher

(January 2021 – June 2023)

- Played a significant role in the preparation of grand proposals for [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 CRISPR-based and XNA-based therapeutic approaches for Spinal Muscular Atrophy (SMA) and Retinitis Pigmentosa.

Supervisor: [Cihan Tastan](#)

HONORS AND AWARDS

Master's Scholarship | *Federal Foreign Office of Germany*

October 2024 – March 2027

Awarded a competitive scholarship funded by the Federal Foreign Office, including a **monthly stipend of €1,044**, to enable my Master's studies in Computational Neuroscience in Germany.

Department Ranking Award | *Uskudar University*

June 2023

Ranked 1st in the graduating class of the Department of Molecular Biology and Genetics.

Erasmus+ Student Mobility Grant | *European Commission*

June 2022

Awarded a **€1,500** Erasmus+ Student Mobility Grant for a research internship at MPI CBS.

PATENTS

1. CRISPR-PE System For Retinol Dehydrogenase 12 (Rdh12) Gene Mutations For Use In The Treatment Of Retinitis Pigmentosa (RP) Disease (*pending*, No: [TR2021022284A2](#))
2. Xeno Nucleic Acid Antisense-Oligonucleotide (XNA-ASO) Sequences for the Genetic Treatment of USH2A Induced Retinitis Pigmentosa Disease (*pending*, No: [TR2022001648A2](#))
3. Neural Lentiviral Vector Containing The Functional Abca4 Gene For Use In The Treatment Of Retinitis Pigmentosa (RP) Disease (*pending*, No: [TR2022000448A2](#))
4. Neurotrophic Factor And Optogenetic System-Based Lentiviral System For Use In Retinal Diseases (*pending*, No: [TR2022021763A2](#))
5. Methods for the Treatment of Spinal Muscular Atrophy (*pending*, No: [WO2025144141A1](#))

VOLUNTEERING

Student Advisor | *BCCN Berlin*

September 2025 – Present

Serve as one of five student contacts listed on the programme website, advising prospective applicants on programme fit and sharing firsthand experience of the programme.

Conference Volunteer | *Bernstein Conference*

October 2025 and October 2026

Supported event organization and assisted participants at two conference events; attended workshops, talks, and poster sessions.

INDUSTRY EXPERIENCE

OPTIIM

Junior Intern Developer

(September 2016 – June 2017)

- Worked part-time as a web developer while in high school, using HTML, JavaScript, jQuery, and CSS to develop websites for Project Portfolio Planning and Resource Management.
- Collaborated with test engineers on load testing and service virtualization, gaining experience in quality assurance and software testing methodologies.

ONLINE COURSEWORK

- **“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](#).
- **“Medical Neuroscience”**, Duration: 13 weeks, [Duke University](#), Platform: Coursera, [Certificate](#).
- **“Computational Neuroscience”**, Duration: 8 weeks, [University of Washington](#), 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](#).