

Serhan YILMAZ

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RESEARCH INTERESTS: **Conversational AI, NeuroAI, Agents, Systems for Retrieval and Reasoning**

EDUCATION

Computer Science — Bachelor of Science SEP 2021 - JUN 2025

Sabanci University

cGPA: **3.63/4**

- **Relevant Coursework:** Machine Learning, Image Processing, Linear Algebra, Statistics, Algorithms, Data Structures, Advanced Programming, Operating Systems, Database Systems
- Ranked **top 0.02%** among 2.9 million students in the National University Entrance Exam.

RESEARCH EXPERIENCE

KTH Royal Institute of Technology — Research Assistant *Stockholm, Sweden* | JUN 2024 - PRESENT

- Developing advanced **AI agents for turn-taking conversation** under Prof. Gabriel Skantze, with potential applications in human-robot interaction.
- Trained model on **7500** dialogues from the **Fisher** dataset, achieving **91%** accuracy in turn-taking prediction.
- Optimized model performance by **60%** through implementation of **Key-Value Cache** and **Attention Sinks**.
- Enhanced model robustness via **on-the-fly data augmentation** techniques integrated into the trainer.

Carnegie Mellon University — Research Assistant *Remote* | DEC 2023 - PRESENT

- Collaborating with Prof. Kemal Oflazer on advanced question generation algorithms for NLP applications.
- Employed transfer learning techniques and **fine-tuned language models**, achieving **91% accuracy** in generating high-quality, diverse research questions.
- Evaluated generated questions using Semantic Similarity metrics, achieving on average **82% similarity** to original questions.

EPFL Lausanne — Summer@EPFL Intern *Lausanne, Switzerland* | JUN 2023 - SEP 2023

- Initiated **Project Charisius**, for developing robust, privacy-preserving Federated ML environments.
- Optimized gradient aggregators, leveraging **PyTorch** and **CUDA** to achieve performance improvements of **2200%** compared to previous versions.
- Published the Charisius library for accelerated Statistics and Federated ML applications, reducing runtime by up to **96%**.
- Developed documentation website and Flask-backed benchmarking leaderboard for the project.

Boston University — Research Assistant *Remote* | JUN 2022 - SEP 2022

- Conducted research on Threat Modeling and Component Design for large-scale server systems under Prof. Rabia Tugce Yazicigil.
- Developed a C++ tool providing **336** combinations for designing secure servers for resource-intensive applications.

LEADERSHIP EXPERIENCE

kAi Sabanci — Founder & President *Istanbul, Turkey* | MAR 2023 - PRESENT

- Founded and led Sabanci University's premier AI club, growing membership to **600+** with **80% active participation**.
- Organized **17 events** in one term, with workshops on Gen AI, NLP, ML, and DL, serving as a **voluntary TA**.
- Secured kAi Sabanci's position as a **founding member** of the **NVIDIA Student Network**.
- Facilitated high-profile visits, including hosting **NVIDIA AI chief Simon See** and organizing a visit to the Turkish Presidency's Digital Transformation Office.
- Supervised **6 major projects**, including ChatSU, and NeRF campus modeling.
- Selected for the prestigious **NVIDIA Student Spotlight** series for outstanding leadership and achievement.
- Awarded for contributions to **"Digitalization & Technological Development"** and **"Internationalization"** by Sabanci University, recognizing kAi Sabanci as the most effective and innovative among **75 student clubs**.

WORK EXPERIENCE

Yapi Kredi Bank — *NLP R&D Engineering Intern* *Istanbul, Turkey* | OCT 2023 - APR 2024

- Enhanced document interpretation algorithms using OCR-free **Donut Transformers**.
- Fine-tuned language models, reducing annotation effort by approximately **40%** through transfer learning.

Sabanci University — *Undergraduate Teaching Assistant* *Istanbul, Turkey* | SEP 2022 - JAN 2023

- Wrote homework assignments for students and held weekly recitation and office hours.

Pharus Tech — *Intern* *Remote* | JUL 2020 - SEP 2020

- Analyzed and visualized data from the ESCO dataset, with information on **3008** occupations and **13890** skills.
- Developed data processing pipelines, improving data analysis efficiency by an estimated **30%**.

PROJECTS

kAi Sabanci — *ChatSU* -

- Implemented a GPT-4 powered conversational AI for the kAi Sabanci website, enhancing user engagement.
- Integrated the AI system into the website's backend and frontend, creating a seamless chat interface for visitors.

kAi Sabanci — *NeRF Campus Modeling* -

- Leading a project to create a detailed 3D representation of Sabanci University using Neural Radiance Fields (NeRF) technology.
- Utilizing advanced AI/ML algorithms and computer vision techniques to generate an immersive, realistic model from 2D images.

kAi Sabanci — *Cat Identification with Jetson Nano* -

- Developing a deep neural network model to identify individual cats on campus using Jetson Nano for real-time video processing.
- Training the model on a custom dataset of campus cats, aiming for high accuracy in various lighting and environmental conditions.

kAi Sabanci — *kAi Sabanci Mobile App* -

- Spearheading the development of a mobile application to enhance member engagement and provide easy access to club resources.
- Integrating ChatSU into the mobile app, providing users with an AI-powered assistant for information and guidance.

AWARDS

Sabanci University — *Contribution to Digitalization & Technological Development* JUN 2024 -

- Awarded to kAi Sabanci for extraordinary achievement and innovation among all 75 student clubs.

Sabanci University — *Contribution to Internationalization* JUN 2024 -

- Recognized kAi Sabanci's efforts in fostering international collaborations and global engagement.

NVIDIA — *NVIDIA Student Spotlight* MAR 2023 -

- Recognized for outstanding perseverance, dedication, and achievement in AI and computer science.

Sabanci University — *Sakip Sabanci Award for Outstanding Success* SEP 2022 -

- Ranked in the **top 4%** among students in my cohort, demonstrating academic excellence.

The Royal Swedish Academy of Engineering Sciences — *Innovation in Crisis Award* MAY 2020 -

- Secured **1st place** as part of team United in Crisis for innovative solutions during challenging times.

The New York Academy of Sciences — *Junior Academy Membership* SEP 2019 -

- Selected for the prestigious "The Junior Academy" program with a highly competitive **8% acceptance rate**.

SKILLS

- **Languages & Tools:** Python, Docker, Linux, AWS, Riva, Git, Javascript, HTML/CSS, C, C++,
- **Libraries:** PyTorch, TensorRT, RAPIDS, JAX, cuDNN, OpenCV, CUDA, Keras, Pandas, NumPy