

Serhan YILMAZ

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RESEARCH INTERESTS: **AI Agents, Conversational AI, 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

Carnegie Mellon University — Research Assistant

Pittsburgh, PA | SEP 2024 - PRESENT

- Collaborating with Prof. Kemal Oflazer and contributing to the **Mu-SHROOM shared task at SemEval 2025**, focusing on precise hallucination localization in multilingual contexts.
- Designing an innovative approach using structured API calls and input paraphrasing to detect and pinpoint hallucinations in LLM outputs.
- Implementing comparison algorithms to validate consistency between paraphrased inputs, enhancing detection accuracy across multiple languages.
- Using cross-lingual embeddings and transformers to improve hallucination detection across different languages.

Technical University of Darmstadt — Research Assistant

Hessen, Germany | JUL 2024 - PRESENT

- Developing reliable AI agents and inspecting agentic behavior under Prof. Iryna Gurevych and Anmol Goel.
- Fine-tuning large language models to create culturally sensitive AI chatbots for refugee support.
- Optimizing inference for deployment of the chatbot at Charité Berlin, Europe's largest university hospital, to psychologically assess and aid Ukrainian refugees.
- Investigating sycophantic behavior in AI agents described by the **Anthropic paper** and developing remedies.

Carnegie Mellon University — Research Assistant

Pittsburgh, PA | DEC 2023 - OCT 2024

- Collaborated with Prof. Kemal Oflazer, developed advanced question generation algorithms.
- Designed and implemented an innovative algorithm utilizing **structured API outputs and multiple language models** to generate high-quality questions.
- Developed an LLM-as-a-Judge approach to evaluate and rank generated questions, significantly improving quality compared to zero-shot prompting.

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

- 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 **94%** 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.

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

Boston, MA | 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** models to design 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.

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*

Stockholm, Sweden | 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.

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