

Hakan Tugrul Otal

PhD Candidate in Information Science & Data Science / AI Engineer

University at Albany SUNY, New York, United States

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hakanotal.github.io — github.com/hakanotal — huggingface.co/hotal

PhD Candidate and Research Assistant specializing in data science and AI engineering. I am dedicated to transforming raw data into actionable insights through advanced predictive modeling, machine learning, and deep learning techniques. My work spans developing end-to-end data pipelines, deploying scalable AI solutions on the cloud, and contributing to research initiatives in statistical analysis, natural language processing, and computer vision.

INTERESTS

Artificial Intelligence, Machine Learning, Deep Learning, Data Science, Big Data Analytics, Predictive Modeling, Natural Language Processing, Computer Vision, Graph Neural Networks, Data Visualization

EDUCATION

University at Albany, SUNY, New York, United States 08-2023 — Present

Ph.D. in Information Science

Data Analytics (Major) – Cybersecurity (Minor)

Istanbul Technical University, Istanbul, Turkey 09-2018 — 06-2023

B.S. in Computer Science

GPA: 3.5/4.0

EXPERIENCE

University at Albany, SUNY

Graduate Research Assistant

08-2023 — Present

- Conduct research focused on developing scalable data analytics and AI-driven systems, including advanced predictive models and natural language processing applications.
- Collaborate on projects involving statistical analysis and machine learning techniques to derive insights from large datasets.

AI in Complex Systems Lab

Research Intern

05-2024 — 08-2024

- Worked on projects employing AI techniques for data anomaly detection and predictive analysis, leading to co-authored research publications.

Parieta AI

Software Engineer

01-2023 — 08-2023

- Designed and developed the web application's UI with integration of data visualization components to support real-time analytics.
- Developed backend services using Nest.js connected to MongoDB, ensuring efficient data flow for AI-driven features.
- Built and optimized AI pipelines for predictive analytics and model training.
- Deployed solutions on AWS and Docker infrastructures, focusing on scalability and efficient data management.

Deka Technology

Software Engineer

07-2022 — 12-2022

- Developed API endpoints for data retrieval and processing for various business applications.
- Integrated SAP services to backend systems ensuring seamless data operations.
- Maintained and monitored over 100 microservices using a suite of tools including Jenkins, Openshift, and Redis, with an emphasis on real-time data processing.

PoiLabs

Software Engineer Intern

09-2021 — 10-2021

- Developed backend services for a mobile application, enhancing data processing and analytics for accessibility solutions.
- Optimized API performance and ensured efficient data handling.
- Collaborated in a team environment using Bitbucket for version control.

SKILLS

- **Programming:** Python, C/C++, Javascript/Typescript
- **ML Frameworks:** Pytorch, Tensorflow, Sklearn
- **Data Tools:** Pandas, Numpy, Matplotlib, Seaborn
- **Database Systems:** MongoDB, PostgreSQL, MySQL
- **Big Data & Cloud:** AWS, GCloud, Docker, Elasticsearch, Redis
- **Visualization & Analysis:** Tableau, PowerBI, Gephi, Networkx, PyG
- **LLM Techs:** Huggingface, Ollama, LMStudio, Unsloth, Llama-Factory

PROJECTS & PUBLICATIONS

- [1] M Mikail Demir, **Otal, Hakan T**, and M Abdullah Canbaz. **LegalGuardian: A Privacy-Preserving Framework for Secure Integration of Large Language Models in Legal Practice.** *arXiv preprint arXiv:2501.10915*, 2025.
 - [2] Hao Jian Huang, Bekzod Iskandarov, Mizanur Rahman, **Otal, Hakan T**, and M Abdullah Canbaz. **Federated Learning in Adversarial Environments: Testbed Design and Poisoning Resilience in Cybersecurity.** *arXiv preprint arXiv:2409.09794*, 2024.
 - [3] **Otal, Hakan T** and M Abdullah Canbaz. **AI-Powered Crisis Response: Streamlining Emergency Management with LLMs.** In *2024 IEEE World Forum on Public Safety Technology (WFPST)*, pages 104–107. IEEE, 2024.
 - [4] **Otal, Hakan T** and M Abdullah Canbaz. **LLM Honey-pot: Leveraging Large Language Models as Advanced Interactive Honey-pot Systems.** In *2024 IEEE Conference on Communications and Network Security (CNS)*, pages 1–6. IEEE, 2024.
 - [5] **Otal, Hakan T**, Stephen V Faraone, and M Abdullah Canbaz. **A New Perspective on ADHD Research: Knowledge Graph Construction with LLMs and Network Based Insights.** *arXiv preprint arXiv:2409.12853*, 2024.
 - [6] **Otal, Hakan T**, Eric Stern, and M Abdullah Canbaz. **LLM-Assisted Crisis Management: Building Advanced LLM Platforms for Effective Emergency Response and Public Collaboration.** In *2024 IEEE Conference on Artificial Intelligence (CAI)*, pages 851–859. IEEE, 2024.
 - [7] **Otal, Hakan T**, Abdulhamit Subasi, Furkan Kurt, M Abdullah Canbaz, and Yasin Uzun. **Analysis of Gene Regulatory Networks from Gene Expression Using Graph Neural Networks.** In *Digital Healthcare, Digital Transformation and Citizen Empowerment in Asia-Pacific and Europe for a Healthier Society*, pages 249–270. Academic Press, 2025.
 - [8] **Otal, Hakan T**, Elyse Zavar, Sherri B Binder, Alex Greer, and M Abdullah Canbaz. **Harnessing Deep Learning and Satellite Imagery for Post-Buyout Land Cover Mapping.** In *2024 IEEE Conference on Artificial Intelligence (CAI)*, pages 665–671. IEEE, 2024.
- B.S. Grad. Project : **Distributed Network Load Generation Software** 2023
 - B.S. Lab Project: **Trust Based Data Storage for E-Health Systems in IoT** 2021
 - ◊ Additional projects can be found on my Github (github.com/hakanotal) profile.

SERVICES

IEEE

IEEE Student Member 09-2023 — Present
 IEEE Computational Intelligence Society (CIS) Member 03-2024 — Present

ACM

Student Member 10-2024 — Present

University at Albany, SUNY

Member of AI in Complex Systems Lab 08-2023 — Present
 Supervisor of Undergrad. Interns at UAlbany Summer Research Program (UASRP) Summer 2024
 Teaching Assistant for 'CINF135: Concepts of AI' Fall 2024, Spring 2024

AWARDS

IEEE Computational Intelligence Society

Student Travel Grant for IEEE CAI 2024

IEEE Communications Society

Student Travel Grant for IEEE CNS 2023, 2024

TPC - Reviewer

Conference on Computational Linguistics (COLING) 2025
 Information Security Journal: A Global Perspective 2024
 IEEE Conference on Communications and Network Security (CNS) 2024
 IEEE Conference on Local Computer Networks (LCN) 2024
 IEEE International Conference on Computer Communications (INFOCOM) 2024
 Complex Networks and their Applications (CNA) 2023, 2024

TAKEN COURSES

PhD's Courses

- Quantitative Methods
- Statistics with R
- Advanced Python
- Computer Networks
- Applied Machine Learning
- Computer Network Security
- Database Systems
- Predictive Modeling
- Text Analysis

Bachelor's Courses

- Analysis of Algorithms I & II
- Artificial Intelligence
- Computer Vision
- Deep Learning
- Computer Security
- Computer Communication Systems

Additional Courses

- Deep Learning for Computer Vision, University of Colorado Boulder, 02-2022

Recommendation Letters Available upon Request:

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Scholar Profile: albany.edu/cehc/faculty/m-abdullah-canbaz**Dr. Tolga Ovatman***Associate Professor**Faculty of Computer and Informatics Engineering**Istanbul Technical University, Istanbul, Turkey*E-mail: ovatman@itu.edu.trScholar Profile: akademi.itu.edu.tr/en/ovatman/