Hakan Tugrul Otal

PhD Student in Information Science / AI Engineer & Developer
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PhD Student and Research Assistant specializing in data science and AI. I am dedicated to transforming raw data into actionable insights through predictive modeling, machine learning, and deep learning techniques. My work spans developing end-to-end data pipelines, deploying scalable AI applications on the cloud, and contributing to research initiatives in natural language processing, large language models, graph networks and computer vision.

INTERESTS

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

EDUCATION

University at Albany, SUNY, NY, USA   08-2023 — Present
Ph.D. in Information Science
Data Analytics (Major) – Information Assurance (Minor)   GPA: 3.9/4.0

University at Albany, SUNY, NY, USA   08-2024 — 12-2025
M.S. in Information Science
Artificial Intelligence and Data Analytics   GPA: 3.9/4.0

Istanbul Technical University, Istanbul, Turkey   09-2018 — 06-2023
B.S. in Computer Science   GPA: 3.5/4.0

EXPERIENCE

University at Albany, SUNY
Research Assistant   08-2023 — Present

- Conducted research focused on developing data analytics and AI-driven projects, including predictive models and NLP applications.
- Collaborated on projects involving statistical analysis and ML 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.
- Supervised undergraduate students in UAlbany Summer Research Program (UASRP).

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 Honeypot: Leveraging Large Language Models as Advanced Interactive Honeypot 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**. In *International Conference on Complex Networks and Their Applications*, pages 337–349. Springer Nature Switzerland Cham, 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   10-2024 — Present
Student Member

University at Albany, SUNY
Member of AI in Complex Systems Lab   08-2023 — Present
Graduate Assistant of Assistant Dean for Public Engagement and Enrollment   Spring 2025
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

Additional Courses

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

Bachelor's Courses

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

Recommendation Letters Available upon Request:

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