# Yunus Serhat Bicakci, PhD

Researcher

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As a researcher with a PhD, I specialise in leveraging big data, machine learning, deep learning, and geospatial analytics to solve complex real-world problems. My expertise includes spatial and spatiotemporal analyses, remote sensing through satellite imagery, and the integration of geographic information systems with advanced artificial intelligence models. I have practical experience with cloud platforms and am proficient in data analysis and deep learning frameworks. Recently, my research has expanded into Vision-based Large Language Models and Multimodal AI, exploring innovative solutions at the intersection of AI and geospatial data science.

## Skills

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| **Programming Languages** | Python (strong), R (good), SQL (good) |
| **Soft Skills** | Leadership, Supporting, Communication, Problem-Solving, Time Management, Creativity |
| **Libraries** | PyTorch, Tensorflow, Transformers (Vision Transformers), Pandas, GeoPandas, Numpy, Gradio, Streamlit |
| **Tools** | Git, Docker, HPC, GCP, PostgreSQL, QGIS, ArcGIS |

## Experience

**Assistant Professor** | Web Page | **Marmara University**, *Istanbul – Türkiye* 01/2025 — Present
**Research Software Engineering Scientist (Affiliate)** | Web Page | **University of Glasgow** *Glasgow – UK* 2024 — Present
**Research Asssociate** | **University of Glasgow** *Glasgow – UK* 2024 — 2024
**Affiliate Academic** | Web Page | **University College London (UCL)** *London – UK* 2023 — 2024

## Latest Projects

**Multi-Lingual and Multi-Modal Location Information Extraction:** Working on the this project in collaboration with The Alan Turing Institute and DSO National Laboratories, focusing on the development of a novel approach for geolocalization using Multimodal Large Language Models (MLLMs) and Retrieval-Augmented Generation (RAG) techniques. Achieved state-of-the-art street-level geolocalization accuracy (1 km) on benchmarks datasets. 2024

**Interactive Crime Mapping with Big Data:** Led the development of a cloud-based interactive crime mapping application. Integrated spatiotemporal datasets from the London Metropolitan Police and geo-tagged tweets to produce real-time visualizations of crime patterns. Enabled dynamic user interactions, including datasets uploads and analyses. 2023

**Semantic Segmentation Model for Building Segmentation:** Developed a novel deep learning framework, ATTransUNet, combining Attention Gated Networks and TransUNet for precise building segmentation using aerial imagery and LIDAR data. Achieved competitive IoU and BIoU scores (IoU: 0.7551, 0.8555; BIoU: 0.5613, 0.7127) in the MapAI competition. 2023

## Education

**PhD** | **Geographical Information Technologies**, *Istanbul Technical University* 07/2021
**MSc** | **Management Information Systems**, *Sakarya University* 07/2013
**BA** | **Business Administration**, *Anadolu University* 06/2011

## Certificates

**TensorFlow Developer Certificate** – Issued by: TensorFlow | Certificate 2022 – 2025
**Google Machine Learning Bootcamp Turkey** – Study time: 5 months – Google Developers & inzva | Certificate 2022
**Deep Learning Specialization** – Issued by: DeepLearning.AI | Certificate 2022

## Grants/Funding

**The Alan Turing Institute & DSO National Laboratories**. (Researcher) 2024 - 2024
**TUBITAK 2219 - Postdoctoral Research Fellowship**. (Principal Investigator) 2023 - 2024

## Latest Publications

**Big Data and Social Media Analytics: Opportunities for Interactive Crime Mapping** Yunus Serhat Bıçakçı, Alina Ristea, Kate Bowers. *New Research in Crime Modeling and Mapping Using Geospatial Technologies*, edited by Michael Leitner, Geotechnologies and the Environment series. DOI 2025

**Performance comparison of vision-language models in classifying Turkish dishes** Yunus Serhat Bıçakçı.*Journal of the Faculty of Engineering and Architecture of Gazi University / in preparation* 2025

**Street-Level Geolocalization Using Multimodal Large Language Models and Retrieval-Augmented Generation** Yunus Serhat Bıçakçı, Joseph Shingleton, Anahid Basiri. *Journal of Visual Communication and Image Representation / in review* 2025

**CNN and Transformer U-Nets in Multiple Sclerosis Lesion Segmentation: A Comparative Assessment** Beytullah Sarıca, Yunus Serhat Bıçakçı, Dursun Zafer Şeker. *Biomedical Signal Processing and Control / in review* 2025

**ATTransUNet: Semantic Segmentation Model for Building Segmentation from Aerial Image and Laser Data**. Yunus Serhat Bıçakçı, Beytullah Sarıca. *Nordic Machine Intelligence, 2(3)*. 2023