Ahmet Hamdi Güzel

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https://aguzel.github.io Google Scholar

PhD candidate in Foundational AI at UCL (supervised by Ilija Bogunovic and Jack Parker-Holder) researching world model-based synthetic data generation for training generalist RL agents in procedurally generated environments, achieving zero-shot generalization despite data scarcity. My current focus involves developing post-training methods to enhance reasoning and robustness in small language models. I am particularly interested in creating hybrid systems that integrate world models with language models for complex decision-making, leveraging learned world representations as both synthetic training data sources and structured reasoning foundations. This work aims to enable intelligent agent deployment in resource-constrained, real-world applications where offline data is limited. Prior to my PhD, I worked in motorsport and automotive engineering for a decade, focusing on data-driven computational modeling.

Employment History

09/2024 – · · · ·
Teaching Assistant, University College London Computer Science Department
Open-Endedness and General Intelligence, Deep Learning for Natural Language Processing, Object-Oriented Programming for Robotics and AI

09/2022 – 08/2023
AI Research Intern, Huawei Technologies Research UK Ltd.
Developed deep learning methods for real-time computer graphics rendering and procedural virtual world generation, achieving 3x inference speedup for interactive environments.

06/2022 – 09/2022
Computer Vision Research Intern, University College London VECG Lab.
Optimized deep learning models for real-time AR/VR rendering, achieving low-latency inference for immersive applications on edge devices.

10/2020 – 09/2021
Lead Research Engineer, AEM Motorsports Division, UK
Built data-driven models for motor efficiency prediction in electric vehicles, accelerating design iteration cycles from days to hours.

10/2016 – 09/2020
Principal Research Engineer, Helix Motorsports Divison, UK
Designed neural network-accelerated electromagnetic performance calculation surrogate models for complex engineering systems, bridging traditional numerical methods with modern deep learning approaches.

09/2011 – 09/2016
Research Engineer, Ford Motor Company, Türkiye
Engineered large-scale simulation frameworks for internal combustion engine analysis.

Education

2024 –
Ph.D. University College London Foundational Artificial Intelligence
Developing world models for synthetic data generation and curriculum learning to train generalist agents with zero-shot generalization capabilities.

2021 – 2023
M.Sc. Artificial Intelligence, University of Leeds with Distinction
Thesis title: *Designing an Efficient Image-to-Image Translation Artificial Neural Network Model for Segmenting Fashion Images.*

2007 – 2011
B.Sc. Computational Engineering, Istanbul Technical University
Thesis title: *Development of Numerical Methods for Multi-Joint Dynamic System Simulation.*

Research Publications

1. A. H. Güzel, M. T. Jackson, J. L. Liesen, *et al.*, "Imagined autocurricula," in *NeurIPS 2025 Conference Submission*, OpenReview, 2025. URL: https://openreview.net/forum?id=zXlB9A5xya.
2. A. H. Güzel, I. Bogunovic, and J. Parker-Holder, "Synthetic data is sufficient for zero-shot visual generalization from offline data," *Transactions on Machine Learning Research*, 2025, ISSN: 2835-8856. URL: https://openreview.net/forum?id=gFmSFa408D.
3. A. H. Güzel, J. Beyazian, P. Chakravarthula, and K. Akşit, "Chromacorrect: Prescription correction in virtual reality headsets through perceptual guidance," *Biomed. Opt. Express*, vol. 14, no. 5, pp. 2166–2180, May 2023. DOI: 10.1364/BOE.485776.
4. A. H. Güzel, P. Lai, and S. Westland, "Designing efficient image-to-image translation artificial neural network model for segmenting fashion images," in *Proceedings of the Intelligent Systems Conference (IntelliSys)*, Accepted, 2024.

Awards and Research Supervision

Master Thesis Supervision

2025
- Offline Diffusion World Models for Continuous, Visual Observations - UCL
- World Models for Scalable Planning at Inference Time - UCL

Awards and Achievements

- **3rd Place Winner**, UCL AI CDT Summer Research Poster Competition- UCL/G-Research

2024
- **Best Poster Award**, UKRI AI CDT Conference - UKRI

2023
- **UKRI Full Research Scholarship**, AI CDT Program, University College London

2022
- **Kaggle Competition Winner**, Image Classification on TinyImageNet30, University of Leeds https://www.kaggle.com/competitions/leedsimageclassification/leaderboard