Marko Tot

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Education

PhD Computer Science and Electrical Engineering Expected Graduation in 2025.
Queen Mary University of London *London, UK*
Focusing train-time vs test-time compute in world models by assessing the benefits of lookahead search in world models.

Microsoft Research PhD Scholarship recipient (2020-2025) member of IGGI CDT, and Game AI research group in Queen Mary University of London.

Experience

PhD Research Intern - Generative Modelling May 2024. – Sep 2024.
Microsoft Research *Cambridge, UK*
- Developed an IDM model for trajectory following in a 3D game using a generative world model.
- Implemented four future alignment strategies for spatial and temporal consistency in trajectory following.
- Assessed the performance of a large world and human action model in a persitancy study.

PhD Research Intern - Reinforcement Learning Oct 2022 – May 2023.
InstaDeep *London, UK*
- Developed a multi-game model trainable in both online and offline RL settings that was able to play and obtain state-of-the-art multi-game performance on 40 Atari games.
- Designed the training pipeline and adapted multi-game optimizers to JAX framework.
- Developed the experimental pipeline and conducted large-scale training.

Teaching Fellow Oct 2021 – Present.
Queen Mary University of London *London, UK*
- Created a curriculum and taught *Generative Deep Learning* course that covered the use of autoencoders, GANs and transformers and for image and text generation.
- Taught *AI in Games* course that covered tree-based planning algorithms and deep reinforcement learning.
- Taught *Further OOP* course that included SOLID principles, design patterns and proper version control.

Research Engineer Oct 2018 – Sep 2019.
European Union Horizon 2020 *Novi Sad, Serbia*
- Adapted PhysiCell framework for artificial evolution and validation of novel strategies for cancer treatment using nanoparticles for EVO-NANO project.
- Tightly collaborated with biologists and physicists throughout the project.
- Created a new AI generated vascular subsystem and integrated it with an established large-scale cell simulator.

Selected Publications

Adapting a World Model for Trajectory Following in a 3D Game ICLR Workshop, 2025
First author

World and Human Action Models towards gameplay ideation Nature, 2025
Coauthor

Statistical Forward Planning Algorithms Tutorial IEEE CoG, 2023
First author

Turning Zeroes into Non-Zeroes: Sample Efficient Exploration with MCGS AAAI Workshop, 2022
First author

What Are You Looking At? Team Fight Prediction Through Player Camera IEEE CoG, 2021
First author

Skills

Programming Languages: Python, C/C++, Java
Frameworks: JAX, PyTorch, NetworkX
Developer Tools: Git, Docker, Google Cloud Platform, Microsoft Azure, W&B, Neptune
Languages: English, Serbian, Croatian, Montenegrin