Eleftherios Triantafyllidis

Zürich, Switzerland

RESEARCH INTERESTS

My research lies at the intriguing intersection of **Machine Learning, Robotics** and **Human Factors**. My current research interest revolves around how the human sensory-motor system can be harnessed and utilised, to develop effective embodied intelligence i.e. robots, inspired and crafted from biological principles, tailored for intricate tasks. I have a deepened understanding of human embodiment and the sense of immersion in telepresence entailing XR.

ACADEMIC EXPERIENCE

The University of Edinburgh **Sep. 2019 – Feb. 2024**
Ph.D., in Computer Science (Robotics, AI and HCI) *Edinburgh, United Kingdom*

- **Doctoral Thesis:** Advancements in Sensory-Motor Perception and Biologically-Inspired Hierarchical Learning for Embodied Intelligence. **(Award: Without Revisions)**
- Supervisory Team: Dr. Zhibin Li and Prof. Taku Komura
- EPSRC Full-Time Scholarship Awardee

The University of Edinburgh **Sep. 2018 – Sep. 2019**
M.Sc. by Research in Computer Science *Edinburgh, United Kingdom*

- **Thesis:** The Contributions of Sensory Feedback in VR Teleoperation of Robotic Tasks of Varying Complexity
- Awarded with distinction – 1st class honours /GPA equivalent: 4.0 (180 ECTS)
- EPSRC Full-time Scholarship Awardee

University of Applied Sciences Kavala **Sep. 2011 – Sep. 2016**
B.Sc., in Computer Science *Kavala, Greece*

- **Thesis:** Fully Autonomous Navigation, Localization and Landing of a Quadcopter with a Monoscopic Camera
- **Outstanding Project Award:** Fully Autonomous Fire Detection Rover Vehicle
- Awarded with very good – 7.37/10 (240 ECTS)

PROFESSIONAL EXPERIENCE

Telexistence Inc., Tokyo **Jul. 2022 – Oct. 2022**
Software Engineer and Programmer (Internship) *Tokyo, Japan*

- Solely responsible for the transition from a real-world company-built robot for drink replenishing purposes operating in the wider metropolitan Tokyo area, to a fully simulated environment (NVIDIA's ISAAC Sim)
- Minimisation of the Sim2Real gap in simulation via appropriate emulation and tuning of physical quantities to accurately match real-world pick and place tasks and increase learning-based skill transferability
- Successful presentation of the system at IROS 2022 in Kyoto, Japan with day-long operation at the conference

The University of Edinburgh **Sep. 2019 – May. 2024**
Teaching Assistant and Support *Edinburgh, United Kingdom*

- Tutor for in a variety of computer science courses and those entailing writing research reviews and proposals
- Supervisor for writing a literature review and research proposal for M.Sc. and M.Sc.R. students

Obligatory Military Service at Hellenic Army **Nov. 2016 – Jul. 2017**

- Responsible for military time and service management tools and classified digital document correspondence

Audi AG **Nov. 2015 – May. 2016**
Software Engineer and Programmer (Internship) *Ingolstadt, Germany*

- Development of an innovative and ergonomic, state-of-the-art, virtual reality project in the Unity engine
- Integration of the latest mixed reality technologies and wearable haptic devices into one system

- Demo presentation to internal and external industry partners Google, HTC (Vive) and Microsoft (HoloLens)
- Deployed a centralised monitoring environment to gather user performance metrics

SELECTED ACADEMIC PUBLICATIONS

- E. Triantafyllidis, F. Christianos, and Z. Li, **Intrinsic Language-Guided Exploration for Complex Long-Horizon Robotic Manipulation Tasks**, ICRA, 2024, Yokohama, Japan.

- E. Triantafyllidis, F. Acero, Z. Liu and Z. Li, **Hybrid Hierarchical Learning for Solving Complex Sequential Tasks Using the Robotic Manipulation Network ROMAN,** Volume: 5, Pages: 991–1005, 2023, *Nature Machine Intelligence*. DOI: 10.1038/s42256-023-00709-2

- E. Triantafyllidis and Z. Li, **The Challenges in Modeling Human Performance in 3D Space with Fitts' Law,** *in CHI Conference on Human Factors in Computing Systems (CHI '21).* Association for Computing Machinery, May 8–13, 2021, Yokohama, Japan. ACM, New York, NY, USA. DOI: 10.1145/3411763.3443442

- E. Triantafyllidis and Z. Li, **Considerations and Challenges of Measuring Operator Performance in Telepresence and Teleoperation Entailing Mixed Reality Technologies,** *in CHI Conference on Human Factors in Computing Systems Workshop CHI '21 (Evaluating User Experiences in Mixed Reality).* Association for Computing Machinery, May 7, 2021, Yokohama, Japan. ACM, New York, NY, USA.

- E. Triantafyllidis, W. HU, C. McGreavy and Z. Li, **Metrics for 3D Object Pointing and Manipulation in Virtual Reality: The Introduction and Validation of a Novel Approach in Measuring Human Performance**, *in IEEE Robotics & Automation Magazine*, doi: 10.1109/MRA.2021.3090070.
  Paper Invitation: Invited for ICRA 2021 as a Conference Paper.

- E. Triantafyllidis, C. McGreavy, J. Gu and Z. Li, **Study of Multimodal Interfaces and the Improvements on Teleoperation**, *in IEEE Access*, vol. 8, pp. 78213-78227, 2020, DOI: 10.1109/ACCESS.2020.2990080.

RECENT ACHIEVEMENTS, AWARDS AND INVITATIONS

- **Award: Best Student Case Study** in the Centre for Doctoral Training in Robotics and Autonomous Systems, Edinburgh, 1st of October 2021, UK. Annual Review 2020/21, Pages: 62-63.

LANGUAGES

English: Proficient, **German**: Proficient, **Greek**: Native

SKILLS & INTERESTS

- **General Skills:** Problem-solving; quantitative evaluation analysis; statistical evaluation methods; quality assurance; outreach and transferability of skills; ability to work in a team with leadership roles; effective use of language and concise transferability of research ideas; effective use of presentation slides in research meetings.
- **Programming:** C#, Python, C++, OCaml, Java, Visual C++/CLI (.NET), LaTeX. VHDL.
- **Simulation and Physics Engines:** Unity3D, Unreal Engine, MuJoCo, CryEngine.
- **Familiarity with Libraries and SDKs:** Oculus, LeapMotion, Tensorflow, Matplotlib, OpenCV, ML-Agents.
- **Applications:** IBM SPSS, Kdenlive, MATLAB, Autodesk, Blender, Photoshop, Visual Studio, Office.
- **Interests:** Running; Swimming; Reddit; Launching spacecraft in Kerbal Space Program – mostly successfully.