Padraig Higgins

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Personal Statement

I am a PhD candidate in the Interactive Robotics and Language Lab at the University of Maryland, Baltimore County. I am interested in human-robot interaction, using gesture and gaze to improve grounded language learning, as well as the use of virtual reality and simulation as tools for data collection. I am interested in a position in government or industry.

Research Interests

Robotics, Human-Robot Interaction, Sim2Real, Virtual Reality

Research Experience

2019 - Present | **Interactive Robotics and Language Lab – University of Maryland, Baltimore County**
Graduate Research Assistant

Education

2020 – Present | **University of Maryland, Baltimore County** *Ph.D. Computer Science*

2017 – 2023 | **University of Maryland, Baltimore County** *M.S Computer Science*

2006 | **University of Maryland College Park** *B.S. in Aerospace Engineering*

Coursework

- Introduction To Robotics
- Introduction Machine Learning
- Advanced Robotics
- Principles of Artificial Intelligence
- Computer Graphics
- Grounded Language Acquisition

Professional Service

Conference Reviewer

2021 | Neural Information Processing Systems (NeurIPS)

2022 | Human-Robot Interaction (HRI)

2022 | Robot and Human Interactive Communication (Ro-Man)

2023 | IEEE Conference on Virtual Reality and 3D User Interfaces (IEEEVR)

2025 | IEEE International Conference on Robotics & Automation (ICRA)

Volunteer

2024 | NSF-FRR NRI PI Meeting

Publications

Conferences

2023 | 1. **Higgins, P.**, Barron, R., Engel, D. & Matuszek, C. *A Comparative Analysis of VR-Based and Real-World Human-Robot Collaboration for Small-Scale Joining* in *2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)* (2023).

2. **Higgins, P.**, Barron, R., Lukin, S., Engel, D. & Matuszek, C. *Collaborative Building in VR vs. Reality* in *18th International Symposium on Experimental Robotics* (2023).

2022 | 3. **Higgins, P.**, Barron, R. & Matuszek, C. *Head Pose for Object Deixis in VR-Based Human-Robot Interaction* in *2022 31st IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)* (2022).

2021 | 4. Kebe, G. Y., **Higgins, P.**, Jenkins, P., Darvish, K., Sachdeva, R., Barron, R., Winder, J., Engel, D., Raff, E., Ferraro, F. & Matuszek, C. *A Spoken Language Dataset of Descriptions for Speech-Based Grounded Language Learning* in *Thirty-fifth Conference on Neural Information Processing Systems Datasets and Benchmarks Track (Round 1)* (2021).

5. Murnane, M., **Higgins, P.**, Saraf, M., Ferraro, F., Matuszek, C. & Engel, D. *A Simulator for Human-Robot Interaction in Virtual Reality* in *2021 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)* (2021).

Workshops

2023 | 1. **Higgins, P.**, Barron, R., Engel, D. & Matuszek, C. *Lessons From A Small-Scale Robot Joining Experiment in VR* in *5th International Workshop on Virtual, Augmented, and Mixed-Reality for Human-Robot Interactions (VAM-HRI)* (2023).

2022 | 2. **Higgins, P.**, Barron, R. & Matuszek, C. *Head Pose as a Proxy for Gaze in Virtual Reality* in *4th International Workshop on Virtual, Augmented, and Mixed-Reality for Human-Robot Interactions (VAM-HRI)* (2022).

2021 | 3. **Higgins, P.**, Kébé, G. Y., Darvish, K., Engel, D., Ferraro, F. & Matuszek, C. *Towards Making Virtual Human-Robot Interaction a Reality* in *3rd International Workshop on Virtual, Augmented, and Mixed-Reality for Human-Robot Interactions (VAM-HRI)* (2021).

Technical Skills

Programming Languages: Python, C, C++, C#
Software: ROS (Robot Operating System), Mac OS X, GNU/Linux
Hardware: 3D Printing