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David J. Watkins

EDUCATION

PhD in Computer Science, *Columbia University*   Sep 2017 — May 2022 Exp.
Advisor: *Prof. Peter Allen*, Thesis: *Learning Mobile Manipulation*
ARL Research Fellow   Sep 2018 — Present
MPhil in Computer Science, *Columbia University*,   Sep 2017 — May 2019
MS in Computer Science, *Columbia University*, 4.0 GPA   Sep 2016 — May 2017
CA Fellowship   Sep 2016 — Jan 2017
BS in Computer Science, *Columbia University*, 3.7 GPA   Sep 2012 — May 2016

SELECTED RESEARCH EXPERIENCE (ADDITIONAL EXPERIENCE LISTED ON MY WEBSITE)

MineRL Basalt Competition   **Jul 2021 — Dec 2021**
Neurips 2021   *New York, NY*
- Developed an autonomous Minecraft agent using human demonstration data and won first place in overall performance and also most human-like agent in collaboration with ARL and UMBC
- Contributed domain expertise in visual navigation and developed the state classifier using human-labeled data
- Work published at AAAI-Make 2022 and presented at Neurips 2019

Mobile Manipulation Leveraging Multiple View   **Jan 2020 — Present**
Columbia Robotics Lab   *New York, NY*
- Developed a system for long-range mobile manipulation using a mobile robot without localization at runtime
- Created novel simulation based techniques for generating data using real-world scanned environments
- Advanced previous navigation work by improving local navigation without localizing the agent and without the goal provided beforehand

Learning Your Way Without Map or Compass: Panoramic Target Driven Visual Navigation   **Jan 2018 — Sep 2019**
Columbia Robotics Lab   *New York, NY*
- Created a system to navigate through real-world scanned environments using simulated images of trajectories
- Developed a novel panoramic target goal methodology for specifying goal locations without needing the goal position at runtime
- Work published to IROS 2020 and presented at NERC 2019

SELECTED PROFESSIONAL EXPERIENCE (ADDITIONAL EXPERIENCE LISTED ON MY WEBSITE)

Co-Founder / Odefi Inc.   **Mar 2019 — Present**
Columbia IBM Blockchain Accelerator   *New York, NY*
- Created a startup company Odefi to deliver liquidity to the MakerDAO network by auto terminating expired contracts as part of the Columbia IBM Blockchain Accelerator in 2019
- Learned the lean launchpad startup process and pitched to several investors: https://www.youtube.com/watch?v=kGa5QHL28FE

Research Fellow   **Sep 2018 — Present**
Army Research Lab   *Aberdeen, MD*
- Participating in drone, robotic navigation, robotic grasping, and simulation research for the Army Research Lab
- Developing hardware acquisition and deployment strategies for research in ARL facilities

Engineering Intern   **Jun 2016 — Aug 2016**
Goldman Sachs   *New York, NY*
- Worked in Margin Technology to prioritize calculations using a graph DBMS and provided an interface to adjust the prioritizations
- Developed in Java and Angular.js to build both the database queries and the user experience

SELECTED PUBLICATIONS (ADDITIONAL PUBLICATIONS LISTED ON MY WEBSITE)

1. **Watkins-Valls, D.**, Maia H., Varley J., Seshadri M., Sanabria J., Waytowich, N., & Allen, P. (2021). Mobile Manipulation Leveraging Multiple Views. Submitted to ICRA 2022

2. **Watkins-Valls, D.**, Xu, J., Waytowich, N., & Allen, P. (2020). Learning your way without map or compass: Panoramic target driven visual navigation. 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS 2020

3. **Watkins-Valls, D.**, Varley, J. & Allen, P. Multi-Modal Geometric Learning for Grasping and Manipulation. 2019 IEEE International Conference on Robotics and Automation (ICRA). IEEE, 2019.

SKILLS

Languages	Python, C++, ROS, Tensorflow, PyTorch, CUDA, Javascript, Bash, LaTeX, MarkDown, Angular.js
Software	Gazebo, PyBullet, GraspIt!, MoveIt!, OpenCV, Blender, Windows, Ubuntu, Jetbrains, Git, Docker
Quantitative Research	Robotics, Neural Networks, Grasping, Navigation, EMG
Communication	English, Spanish