Adam Conkey, Ph.D.

✉ adam.conkey@gmail.com   ✆ (330) 224-1159   in linkedin.com/in/adamconkey   ⌨ adamconkey.github.io

EDUCATION

University of Utah   Salt Lake City, UT
Ph.D. Computing: Robotics – GPA: 3.9   *Aug 2016 – Dec 2022*

DePaul University   Chicago, IL
M.S. Computer Science: Artificial Intelligence – GPA: 4.0   *Jan 2014 – Jun 2016*

Carnegie Mellon University   Pittsburgh, PA
B.S. Mathematics and Philosophy – GPA: 3.4   *Aug 2007 – May 2011*

PROFESSIONAL EXPERIENCE

Berkshire Grey   Pittsburgh, PA
Senior Software Engineer   *Jan 2024 – Present*
- Generalist software developer and seasoned bug hunter on the Robotic Pick Cell Applications team.

HRL Laboratories   Malibu, CA
Robotics Machine Learning Research Scientist   *Aug 2022 – Jan 2024*
- Technical lead of team developing autonomous system for undersea robot manipulation and perception.
- Designed and implemented behavior trees (C++) for robust manipulation of objects underwater.
- Streamlined training and deployment of models for object detection and pose estimation (PyTorch).
- Created software infrastructure (ROS2) to integrate perception (Python) and robotics (C++) pipelines.
- Mentor of a summer intern project exploring sensor fusion with factor graphs for object pose estimation.

Amazon Robotics   North Reading, MA
Research Scientist Intern: Advanced Robotics   *May 2019 – Aug 2019*
- Implemented robotic system for handling mixed packages in an unstructured environment (C++, ROS).
- Integrated software from perception and robotics teams to create a viable hardware demo of my project.
- Developed an application (Python) for discrete event simulation, visualization, and timing analysis.

Accenture   Austin, TX
Associate Software Engineer   *Apr 2015 – Jul 2016*
- Developed new front-end and back-end application features for state healthcare exchanges.
- Engaged as a versatile member of an Agile Scrum team for Java, SQL, and user interface development.

United States Patent and Trademark Office   Alexandria, VA
Patent Examiner in Computer Science   *May 2012 – Nov 2013*
- Examined patent applications in the art of compiler design and software development tools.
- Conducted exhaustive searches of prior art to issue decisions on the patentability of claimed inventions.

RESEARCH EXPERIENCE

Utah Learning Lab for Manipulation Autonomy   Salt Lake City, UT
Graduate Research Assistant (Advisor: Tucker Hermans)   *Aug 2016 – Dec 2022*
- Explored novel movement primitives for learning force-position control from human demonstrations.
- Devised a new model-based algorithm for efficient robot skill planning under state and goal uncertainty.
- Developed fusion models for sensor data (RGB-D, forces, poses) to support manipulation skill planning.
- Primary developer and maintainer of lab's real-time KUKA robot control infrastructure (C++, Orocos).
- Designed and implemented a software stack for large-scale data collection of executed robot behaviors.

- **Languages:** Python, Rust, C++, Java

- **Software:** ROS/ROS2, MoveIt, PyTorch, TensorFlow, Numpy, OpenCV, Open3D, Kafka

- **Simulation/Modeling:** Drake, NVIDIA Isaac, Gazebo, DART, CoppeliaSim, PyBullet, Blender

- **Robots:** KUKA iiwa, KUKA LBR4+, ABB, FANUC Cobot, Rethink Robotics Baxter, Orion 7P

- **Sensors:** RealSense RGB-D cameras, Kinect RGB-D cameras, 6-Axis force/torque sensors, Subsea cameras

- **Misc:** Linux, Git, Jira, Docker, Jenkins, Conda, Pip, CMake, Bash, LaTeX

PUBLICATIONS

- Y. Huang, N.C. Taylor, A. Conkey, W. Liu, and T. Hermans. "Latent Space Planning for Multi-Object Manipulation with Environment-Aware Relational Classifiers". *IEEE Transactions on Robotics (T-RO)*, 2024.

- Y. Huang, A. Conkey, and T. Hermans. "Planning for Multi-Object Manipulation with Graph Neural Network Relational Classifiers". *International Conference on Robotics and Automation (ICRA)*, 2023.

- A. Conkey "Skill Planning Under State and Goal Uncertainty for Robot Manipulation Tasks". *Ph.D. dissertation*, 2022.

- A. Conkey and T. Hermans. "Planning under Uncertainty to Goal Distributions". *arXiv preprint*, 2021.

- A. Conkey, "Representation Learning for Multisensory Perception and Planning." *Robotics: Science and Systems (RSS) Pioneers Workshop*, 2020.

- A. Conkey and T. Hermans. "Active Learning of Probabilistic Movement Primitives." *IEEE-RAS International Conference on Humanoid Robots (Humanoids)*, 2019.

- A. Conkey and T. Hermans. "Learning Task Constraints from Demonstration for Hybrid Force/Position Control." *IEEE-RAS International Conference on Humanoid Robots (Humanoids)*, 2019.