Adam Conkey, PhD

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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*
- **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.

Skills

- **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+, 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)*, 2023.
- 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.