

Adam Conkey

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(330) 224-1159

EDUCATION

- **University of Utah** Salt Lake City, UT
Ph.D. Computing: Robotics (In Progress) – GPA: 3.9 August 2016 – Present
- **DePaul University** Chicago, IL
M.S. Computer Science: Artificial Intelligence – GPA: 4.0 January 2014 – June 2016
- **Carnegie Mellon University** Pittsburgh, PA
B.S. Mathematics and Philosophy – GPA: 3.4 August 2007 – May 2011
 - Mellon College of Science Research Honors

PROFESSIONAL EXPERIENCE

- **Amazon Robotics** North Reading, MA
Research Scientist Intern: Advanced Robotics May 2019 – August 2019
 - Implemented an end-to-end robotic system for performing a material handling task using ROS and C++.
 - Developed a Python application for discrete event simulation, visualization, and timing analysis.
- **Accenture** Austin, TX
Associate Software Engineer April 2015 – July 2016
 - Developed new application features for state healthcare exchanges.
 - Engaged as a versatile member of an Agile Scrum team by contributing to the Java framework, SQL database interface, front-end graphical interfaces, and the back-end Oracle Policy Automation suite.
- **United States Patent and Trademark Office** Alexandria, VA
Patent Examiner in Computer Science May 2012 – November 2013
 - Examined patent applications in the art of compiler design and software development tools.
 - Conducted exhaustive searches of the prior art and issued official decisions regarding the patentability of claimed inventions in view of discovered references.

RESEARCH EXPERIENCE

- **Utah Learning Lab for Manipulation Autonomy** Salt Lake City, UT
Graduate Research Assistant August 2016 – Present
 - Investigating new deep learning methods for acquiring latent representations of multisensory signals.
 - Developed novel methods for learning robot skills from human demonstration.
- **Scientific Computing and Imaging (SCI) Institute** Salt Lake City, UT
Independent Study January 2017 – May 2017
 - Investigated the application of Topological Data Analysis to time-varying functional brain networks in order to characterize resting-state brain activity of patients with Autism Spectrum Disorder.
- **AProS - Automated Proof Search** Pittsburgh, PA
Researcher November 2008 – May 2011
 - Led an effort to improve the search efficiency of an automated theorem prover called AProS.
 - Developed syntactic abbreviations for the display of concise and coherent formal proofs as a key contribution to the project's expansion into set theory and metamathematics.

TECHNICAL SKILLS

Python, C++, Java, ROS, PyTorch, TensorFlow, Keras, Gazebo, IsaacSim, CoppeliaSim, DARTSim, PyBullet, OROCOS, KDL, MoveIt, rviz, URDF, Linux, Git, Docker, Jenkins, LaTeX

PUBLICATIONS

- 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.

SOFTWARE PROJECTS

- [**Python, TensorFlow, Keras, PyTorch**] Designed, developed, and trained deep learning models for multisensory prediction, first in TensorFlow Keras API and subsequently in PyTorch.
- [**Python, ROS**] Implemented Dynamic Movement Primitive and Probabilistic Movement Primitive policy representations with novel extensions (see Publications).
- [**C++, OROCOS, KDL**] Developed real-time-safe robot control components in the OROCOS framework for an LBR4 robot arm with online controller switching capabilities.
- [**C++, ROS**] Designed and implemented an abstraction layer for communicating with and controlling different robot platforms in a unified manner.
- [**C++, KDL, DARTSim, Gazebo**] Created a robot control framework for simulated robots in Gazebo. Implemented joint and task space controllers for various robot arms and hands.
- [**Gazebo, URDF**] Modeled robot manipulators suitable for simulation in Gazebo with integrated actuation and sensor models using URDF and xacro.
- [**Python, C++, ROS, DARTSim, rviz**] Implemented a lightweight simulation environment for teleoperation visually rendered in rviz with DARTSim as the physics backend. Provided an interface for users to command robot motions using a haptic input device with haptic feedback rendered to the user.
- [**Python, ROS**] Developed a utility package to quickly perform camera-to-robot calibration using fiducial markers.
- [**Python, ROS**] Built a Learning from Demonstration framework for the Baxter robot to record demonstrations and interface with ROS service calls via button presses on the robot arms and torso.
- [**Python, ROS**] Developed a package to enable making ROS service calls via button presses on an Xbox controller for streamlining experiments in a Learning from Demonstration data collection framework.
- [**Jenkins**] Set up and actively maintain a Jenkins server for continuous integration of the software stack developed by the Utah Learning Lab for Manipulation Autonomy.
- [**Python, CoppeliaSim**] Developed a trajectory optimization project with CasADi as a teaching assistant for a graduate-level motion planning course using a CoppeliaSim simulation environment.
- [**Python, ROS**] Set up a pick-and-place pipeline with the Baxter robot and fiducial marker object tracking as a teaching assistant for a graduate-level robotics course.