Ben Kolligs

Staff Research Engineer - Robot Learning

Robotics research engineer focused on VLA post-training, offline RL, and real-robot policy improvement, with experience taking motion-planning and simulation R&D from concept to deployment and building large-scale training infrastructure.

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Work Experience

Staff Research Engineer - Robot Learning, Maven Robotics

01/2025 - Present, Santa Clara, CA

- Implemented and evaluated offline RL post-training methods, improving simulated task success rate by ∼40% relative to $\pi_{0.5}$ and GR00T N1d7 baselines.
- Iterated on three robotic tasks through DAgger and real-robot evaluation, achieving an average relative improvement of ∼50% in task success rate; analyzed successful and failed rollouts to curate datasets for policy and value-function training.
- Investigated return labels, success/failure sampling, and value-function design, using experimental findings to guide training and data-collection decisions.
- Built simulation infrastructure using Genesis, MuJoCo, and Isaac Lab and evaluated MJX-accelerated MuJoCo Playground for rapid RL experimentation.
- Evaluated HIL-SERL as a baseline on a simulated customer-relevant manipulation task, achieving 100% task success.
- Deployed a dual-arm robotic kitting workflow to a customer pilot, integrating coordinated motion planning, collision avoidance, and perception for production use.
- Curated ∼50 TB of data from open-source datasets, applying reward models for quality filtering with positive results and developing an embedding pipeline to cluster similar tasks for mid-training data selection.
- Built a shared ingestion and processing pipeline for production and research robot data, providing robust querying and visualization to multiple teams across distributed on-premises and cloud infrastructure.
- Led end-to-end setup of $11M in compute infrastructure spanning 152 GPUs for an AI team of 10 researchers; developed containerized multi-node training pipelines with ZenML, Kubernetes, and Ray for reproducible model training and experimentation.
- Reimplemented a grasp prediction network from the literature and integrated it into a vision-guided manipulation pipeline with segmentation, point-cloud processing, and synthetic data generation, using it as a baseline against end-to-end learned policies.

Senior Robotics Software Engineer, Ambi Robotics

06/2022 - 01/2025, Berkeley, CA

- Co-designed and implemented a C++ rendering and simulation system to generate synthetic training data for a manipulation foundation model; mentored the project lead on rendering system development.
- Performed ongoing performance evaluation, regression testing, and systematic robustness assessment of production robotic systems throughout development and deployment.
- Oversaw production deployment of an ML-based optical character recognition system, improving scanning success by 5%.
- Led motion-planning R&D for Ambistack from literature review and method adaptation through custom robot-driver integration and deployment on production machines.
- Led motion-planning R&D for the Ambisort A gantry from concept to deployment on production machines, integrating Yaskawa motor controls and a custom Rust driver; increased average speed by 15% while reducing support incidents.
- Redesigned Ambisort A's multithreaded software architecture, increasing machine throughput by 10% and reducing support incidents.
- Led software architecture for Ambisort B, implementing the Python sortation application and a Rust driver for Modsort conveyors.

- Mentored robotics software interns and managed their projects across the 2023 and 2024 summer programs.

Software Technical Lead, State Estimation, Moonranger Lunar Rover

11/2020 - 05/2022, Pittsburgh, PA

- Led state estimation for a NASA-funded lunar rover, implementing Kalman-filter orientation estimation and designing pose correction using visual odometry and solar ephemeris data.
- Developed a kinematics model to estimate slip on soil and lunar regolith simulant; co-designed flight software architecture using C++ and NASA cFS.

Robotics Software Engineering Intern, ProtoInnovations

05/2021 - 08/2021, Pittsburgh, PA

- Developed Python and C++ perception, planning, and control software for planetary rover terrain manipulation in lunar simulant, completing SBIR deliverables and demonstrating results for NASA.

Robotics Engineer, Keen Footwear

02/2018 - 02/2020

- Led robotics engineering for UNEEKBOT, programming ABB robots and analyzing data with Python and C++; designed an electromechanical improvement that reduced error rate by 50%.
- Served as lead field engineer for international UNEEKBOT deployments and trained operators in the US, Japan, and Hong Kong.

Skills

- Python / PyTorch
- C++
- Rust
- Robot Learning
- Vision-Language-Action Models
- Offline RL
- DAgger / Imitation Learning
- Motion Planning
- MuJoCo / Isaac Lab / Genesis
- Kubernetes / Ray
- Multi-node Training
- ZenML
- Linux

Education

Masters of Robotics Systems Development, Carnegie Mellon University

08/2020 - 05/2022

BA Physics and Math, Lewis & Clark College

08/2014 - 05/2018