Prithwish Dan

Albany, NY | 518-390-8062 | pd337@cornell.edu | LinkedIn | Portfolio | GitHub

Education

Cornell University — Ithaca, NY
Master of Science in Computer Science — *Expected Graduation: May 2026*
- Advisor: Sanjiban Choudhury - Machine Learning, Robotics, Imitation Learning

Cornell University — Ithaca, NY
Bachelor of Science in Computer Science, GPA - 4.135 (Summa Cum Laude) — *Aug. 2020 - May 2024*
- Coursework: Computer Vision, Robot Learning, Large-Scale Machine Learning, Operating Systems, Analysis of Algorithms

Publications

1) **One-Shot Imitation under Mismatched Execution** — CoRL 2024
Prithwish Dan*, Kushal Kedia*, and Sanjiban Choudhury* — *In Submission*
- Developed novel framework to align visual representations for cross-embodiment imitation learning using optimal transport
- Outperformed prior works by 50%+ in task completion rate across datasets with different levels of embodiment mismatch

2) **MOSAIC: A Modular System for Assistive and Interactive Cooking** — CoRL 2024
*Yuki Wang, Kushal Kedia, Juntao Ren, **Prithwish Dan**, et al., and Sanjiban Choudhury* — *In Submission*
- Developed a modular architecture for coordinating multiple robots to interact and collaborate with users in the kitchen
- Won best paper award @ VLNMN workshop and best poster award @ MoMa workshop

3) **InteRACT: Transformer Models for Human Intent Prediction Conditioned on Robot Actions** — ICRA 2024
*Kushal Kedia, Atiksh Bhardwaj, **Prithwish Dan**, and Sanjiban Choudhury* — *Accepted*
- Implemented novel algorithm to predict human intent conditioned on robot actions for collaborative manipulation
- Reduced forecasting errors by 2x for 3 human-robot tasks by pre-training on large-scale human-human activity data

4) **ManiCast: Collaborative Manipulation with Cost-Aware Human Forecasting** — CoRL 2023
*Kushal Kedia, **Prithwish Dan**, Atiksh Bhardwaj, and Sanjiban Choudhury* — *Accepted*
- Formulated new learning objective to learn cost-aware human motion forecasts for human-robot interactions
- Improved downstream planning metrics such as reaction time and time-to-goal by over 25% relative to baselines

5) **A Game-Theoretic Framework for Joint Forecasting and Planning** — IROS 2023
*Kushal Kedia, **Prithwish Dan**, and Sanjiban Choudhury* — *Accepted*
- Proposed method to jointly train a forecaster and planner to encourage safer autonomous planning in crowd settings

Experience

PoRTaL Lab — Ithaca, NY
Machine Learning/Robotics Researcher — *Jan. 2023 – Present*
- Leading research initiatives to leverage visual human demonstrations for long-horizon imitation learning, incorporating large-scale foundation models to reduce robot tele-operation requirements using deep learning and computer vision
- Building novel human intent prediction frameworks in PyTorch and ROS to enable seamless human-robot collaboration
- Proposing and developing affordable real-time human motion forecasting setups in an effort to safely deploy home robots

MongoDB - SF — San Francisco, CA
Software Engineering Intern — *June 2024 – Present*
- Building Key Management System in a Java backend to support secure multi-cloud (AWS, GCP, Azure) cluster integration

MongoDB - NYC — New York City, NY
Software Engineering Intern — *June 2023 – Aug. 2023*
- Implemented novel slot-based query execution algorithm in C++ for MongoDB's full-text search feature, achieving 40%+ increased speeds and 10x reduced memory usage, providing users with improved database experiences
- Collaborated cross-functionally with core server and cloud teams to ensure efficient data transfer in query pipelines

Awards

Merrill Presidential Scholar 2024 — Webpage
- Honors Top 1% of all Cornell undergraduates in academic achievement and leadership

CRA Outstanding Undergraduate Researcher 2024 - Honorable Mention — Webpage
- Recognizes top undergraduates across North America with outstanding research potential in a computational field

Technical Skills

Languages: Python, C/C++, Java, OCaml, JavaScript/TypeScript
Frameworks/Technologies: PyTorch, OpenCV, NumPy, Tensorboard, Pandas, ROS, JUnit, Flask, React, Bazel
Developer Tools: Git, Linux/Unix, Windows, VSCode, JetBrains, Postman

Additional Experience

Cornell Bowers CIS Ithaca, NY
Teaching Assistant *Jan. 2022 – Present*

- Holding office hours, review sessions, grading exams/assignments, and leading discussion sections for courses in Robot Learning, Data Structures & Functional Programming and Analysis of Algorithms to assist CS students (400+ students)

Cornell Cup Robotics Ithaca, NY
C1C0 CS Systems Lead/Path Planning Lead & Software Engineer *Sept. 2021 – Dec. 2022*

- Led a group of 15+ Software Engineers, facilitating seamless integration of chatbot with facial recognition and path planning
- Spearheaded a team of engineers in path planning for a semi-autonomous lab assistant robot leveraging A* search
- Integrated indoor GPS and LiDAR sensors through a server-client architecture, unifying path planning and locomotion

Northwestern Mutual Milwaukee, WI
Software Engineering Intern *June 2022 – Aug. 2022*

- Worked in an Agile environment to develop components of the content factory pipeline in order to modernize document handling in the life insurance market with e-delivery across all 50 states
- Migrated test cases from 100+ repositories into a Zero Touch Quality Assurance automated testing infrastructure

SUNY Polytechnic Institute Albany, NY
Neuromorphic Computing Research Intern *June 2021 – August 2021*

- Produced an image recognition demo application of In-Memory Vector-Matrix Multiplication achieving over 95% accuracy, inspired by AprilTags
- Researched resistive memory devices and their applications in high speed non-Von Neumann technologies
- Designed and built a GUI in Python to optimize microcontroller-to-memristor communication

Projects

Munchkey! | *Java, libgdx, box2d*

- Led architectural designs and game development for a team of 4 programmers and 6 designers using libgdx and box2d
- Won audience vote for best desktop game in the GDIAC 2023 showcase

Show Tracker App | *Python, Flask, SQL, Heroku, Docker, Postman*

- Collaborated with a team of 5 developers to design a backend infrastructure with a relational database and deploy a RESTful API with 10+ HTTP routes for a show-tracking iOS application
- Received an honorable mention for Best Backend out of 25 teams in the Cornell AppDev Hackathon

Reddit Analysis Tool (NLP/ML) | *OCaml, OUnit2, OWL*

- Developed a system to analyze subreddits on the Reddit platform, generating text-based prediction algorithms and information using Natural Language Processing and Machine Learning techniques
- Made Reddit API requests to retrieve necessary subreddit information for analysis, including text and upvotes