Dhruva Bansal

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EDUCATION

Stanford University | Stanford, CA September 2021-June 2023
Master of Science in Computer Science, Concentration: Artificial Intelligence

Georgia Institute of Technology | Atlanta, GA August 2018-May 2021
Bachelor of Science in Computer Science, GPA 3.97/4.0, Concentration: Intelligence and Theory
Courses: Imitation Robot Learning, Deep Learning, Machine Learning, Artificial Intelligence, Computer Vision, Algorithms
Publications: RSS 2021, CHI 2021, IROS 2020, MobiSys 2019

PROFESSIONAL EXPERIENCE

Amazon Robotics | Boston, MA | *Software Development Engineer Intern* May 2021-August 2021
Owned a service that automated warehouse stow station setup by leveraging state-of-the-art computer vision.
Trained ResNet-34 and Darknet-53 models on 50+ warehouses to compute unknown parameters and enable automation.
Employed evaluation metrics such as IoU to verify the service's 99.95% accuracy in computing parameters on the test set.
Architected and containerized production-ready training and inference pipelines using Python, PyTorch, and Docker.
Deployed inference pipelines to AWS using a Flask-based web server, SageMaker, EC2, Lambda, S3, DynamoDB, and SNS.
Expedited warehouse operations, reduced associate workload, and eliminated dependencies without sacrificing accuracy.

Honeywell Inc. | Atlanta, GA | *Software Engineer Intern* May 2019-July 2019
Built a web app to extract relational data from scanned documents using Python, TensorFlow, and OpenCV.
Built upon existing APIs for expanding the analysis of industrial data using JavaScript, Node.js, and MongoDB.
Wrote production-ready code with 95% test coverage to handle over 3 million requests every month.

RESEARCH EXPERIENCE

Stanford Vision Lab | Stanford, CA |*Graduate Research Assistant* August 2021-Present
Working with Prof. Fei-Fei Li to explore novel Reinforcement Learning algorithms for learning common household tasks.
Developing RL algorithms that leverage human feedback, state prediction, and scene graphs in continuous environments.

Georgia Tech RAIL | Atlanta, GA | *Undergraduate Researcher* January 2020-May 2021
Paper on learning instance-level n-ary semantic knowledge for service robots published at RSS'21.
Paper titled "Anticipatory Human-Robot Collaboration via Multi-Objective Trajectory Optimization" published at IROS'20.
Implemented Transformers in PyTorch for commonsense reasoning, outperforming baselines by 11% on search accuracy.
Predicted human motion using Gaussian Mixture Models for trajectory optimization using Python and ROS.

Georgia Tech CCG | Atlanta, GA |*Undergraduate Researcher* August 2018-May 2021
Paper on using sign language recognition to help deaf children acquire language skills published at CHI'21.
Recognized American Sign Language using HMMs, Transformers, and 2D hand tracking using Python and PyTorch.
Demonstrated that HMMs outperform Transformers for ASL recognition by 17% in user-independent settings.
Received the President's Undergraduate Research Award from Georgia Tech for ASL recognition efforts.

PROJECT EXPERIENCE

Learning from Suboptimal Demonstrations | *Georgia Tech* March 2021-May 2021
Developed a novel semi-supervised algorithm for directly learning from partially labeled suboptimal demonstrations.
Leveraged Transformers to classify states as suboptimal and inverse reinforcement learning to learn policy.

Confident Machine Translation | *Facebook AI Research* April 2020-August 2020
Developed a Confident Machine Translator using Pytorch in collaboration with Facebook AI Research.
Leveraged language models to classify translations 10% more accurately than baselines.

Georgia Tech Aerial Robotics | *Autonomous Drone Competition* July 2019-February 2020
Implemented pathfinding and obstacle recognition for drones in Python using TensorFlow, OpenCV, and ROS.

RoboRacing | *RoboJackets* January 2019-May 2019
Implemented an autonomous PD controller based upon path planning in Python and ROS.

SKILL

Python, PyTorch, TensorFlow, Java, C++, Git, OpenCV, ROS, C#, JavaScript, Node.js, Bash, Flask, MongoDB, Docker, Unity

AWARDS

CHI Student Research Competition Winner (2021), GT Outstanding Undergraduate Research Award (2021), President's Undergraduate Research Award (2021), MobiSys Best Poster (2019), HackGT 5 - Best Accessibility Hack (2019)