

Alexiy Buynitsky

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GOAL

I am a CS and Math double major and I love learning anything new. I want to apply my experiences and knowledge to cutting-edge projects that leverage the forefront of CS. I'm confident my drive, passion, work ethic, and curiosity will help me make valuable contributions.

EDUCATION

Purdue University <i>West Lafayette, IN</i> <i>Masters of Science in Computer Science</i> Courses: Robotic Learning, Robot Manipulation, Machine Learning	Aug 2024 – May 2025 GPA: 4.00
Purdue University <i>West Lafayette, IN</i> <i>Bachelors of Science in Computer Science, Bachelors of Science in Mathematics</i> Courses: Algorithms, Linear Algebra I & II, Abstract Algebra, Systems Programming, Data Structures & Algorithms Real Analysis, Discrete Math, Computer Architecture, C Programming, Physics E&M, Statistics Complex Analysis, Artificial Intelligence, Probability	Aug 2022 – May 2025 GPA: 4.00
De Anza College <i>Cupertino, CA</i> <i>Double Enrolling HS Student</i> Courses: Differential Equations, Multivariable Calculus, C++ Programming, x86 Programming, Python Programming	Jun 2021 – Jun 2022 GPA: 4.00

EXPERIENCE

AI Engineer Intern @ Armada AI <i>Remote</i> <ul style="list-style-type: none">First Intern at Armada AI building Edge AI Applications for remote compute hardwareDeveloping spatially aware CV and LLM robotic control methods by generating synthetic data and finetuning models using SFT and DPOBuilding VideoQA assistant for realtime video Q&A for security camera footageBuild prompting library with support for customizable prompting formats, single / multi-shot prompting from variable datasets, open/closed source LLMs / custom checkpoints	Oct 2023 - Present
Undergraduate Robotics Researcher @ CoRAL Lab <i>Purdue</i> <ul style="list-style-type: none">Conducting research on robotic learning under the supervision of Professor Ahmed QureshExtended Unitree simulator to support Unitree B1 Quadruped Robot in Gazebo and PyBulletResearching Motion Planning in dynamic environments via Network Time Fields and Sign Distance FieldsTeaching robots to navigate through Purdue with custom knowledge using LLMs, RAG, and vector databases	Aug 2023 - Present
Engineering Intern @ SpaceX <i>Redmond, WA</i> <ul style="list-style-type: none">Develop mechatronic / software solutions for quicker manufacturing and assembly of Starlink SatellitesPrototype satellite assembly cells, working with 6-axis robotics arms, CV, actuators, sensors, & safety hardwareAchieve 80x speedup between PLC & CV software by developing an IP-style communication libraryCreate automation scripts using Python, TypeScript, C/Cpp, and C# / .Net, saving \$200k on one instance	May 2023 - Aug 2023
Tensorflow Model Developer @ Google x Duality Lab <i>Purdue</i> <ul style="list-style-type: none">Building data pipeline for Maskformer and Mask2former using Google Deeplab2 and TensorflowGenerate, decode, and load TFRecords for panoptic segmentation from COCO dataset with Bash and PythonApply random-cropping and color jitter to images/masks, create project config and data loaders	Jan 2023 - May 2023
TE AI Cup @ Te Connectivity x ML @ Purdue <i>Purdue</i> <ul style="list-style-type: none">Achieved 83% accuracy in forecasting sales for 1300+ products using LSTMs, and Time Series TransformersBuild framework to study the effects of external economic indicators on model prediction for any time-series data	Nov 2023 - May 2023
IRL Rocket League @ Autonomous Robotics Club <i>Purdue</i> <ul style="list-style-type: none">Refactor sim to better reflect real-world conditions by randomizing physics dynamics, tuning car properties, and simulating latency with Rospy and ROS	Apr 2022 - Dec 2022
Signal Proceasing Intern @ The SunScool App <i>Sunnyvale, CA</i> <ul style="list-style-type: none">Trim, normalize, and denoise voiceovers from 80+ chapters with noise profiles, High and Low Pass filtersAdjusted audio volume and determined parameters for audio voice overs with FFmpeg and SOX	Apr 2022 - Oct 2022

PROJECTS

Gesture Controlled HCI | *Pytorch, Flask, MongoDB* Jan 2024 – Mar 2024

- Built a continuous learning model to detect hand poses at 30FPS allowing for customizable hand poses
- Categorized hand gestures through VLLMs and vector databases and create custom actions using open-interpreter

Robotics Mini-Projects | *Pytorch, Gazebo, Pybullet, ROS* Jan 2024 – May 2024

- Implement (bi)RRT, (bi)RRTConnect, RRT* for cars and 6-DOF arms; Iterative/Analytic PID for Quadruped robots and 2-DOF arms; MPNet in 2D/3D environments; VPG for 2-DOF arm

1st Place Purdue BoilerMake X Hackathon Dagshub | *Pytorch, MLFlow, DVC, Dagshub* Jan 2023

- Used seq2seq model to study key factors affecting air quality. Created a robust, modular testing environment for time-series forecasting with any data through MLFlow, DVC, and git using DagsHub

Image Processing | *Pytorch* Oct 2022

- 1st place in ML@Purdue Pokémon Classifier Competition using VGG16s, and transfer learning with ResNets
- Tracked objects with K-means clustering, and created image masks and filters

TECHNICAL SKILLS

Languages: Python, C/C++, Java, TypeScript, C#, Bash, x86 Assembly, SQL

Frameworks: Pytorch, Tensorflow, RPC, ROS, RestFUL APIs

Platforms/Tools: Docker, Conda, Catkin, Linux, VIM, Github, Dagshub, Onshape