

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 | *B.S. in Computer Science, B.S. in Math* | West Lafayette, Indiana Aug 2022 – May 2025

Graduate: Robotic Learning

GPA 4.0/4.0

Undergraduate: Analysis of Algorithms • Linear Algebra I & II • Data Structures & Algorithms • Abstract Algebra • Systems Programming
Real Analysis • Discrete Math • Computer Architecture • C Programming • Physics E&M • Statistics • OOP in Java

Future Courses: Complex Analysis, Artificial Intelligence, Data Mining and Machine Learning, Probability

De Anza College | Cupertino, California

Jun 2021 – Jun 2022

Differential Equations • Multivariable Calculus • C++ Programming • x86 Programming • Python Programming

GPA 4.0/4.0

EXPERIENCE

AI Engineer Intern | *Armada AI* | Remote

Oct 2023 - Present

- Develop natural language robot control methods using CV and LLMs
- Generate synthetic datasets and finetune LLMs through SFT + DPO

Cognitive Robot Autonomy & Learning Lab | *Undergraduate Researcher* | Purdue

Aug 2023 - Present

- Conducting research on robotic learning under the supervision of Professor Ahmed Qureshi
- Teaching quadruped robots to navigate outdoors through LLMs, SDFs, RAG and vector databases

SpaceX | *Engineering Intern* | Redmond, Washington

May 2023 - Aug 2023

- Develop mechatronic / software solutions for quicker manufacturing and assembly of Starlink satellites
- Prototype satellite assembly cells, working with 6-axis robotics arms, CV, actuators, sensors, & safety hardware
- Achieve 80x speedup between PLC & CV software by developing an IP-style communication library
- Create automation scripts using Python, TypeScript, C/Cpp, and C# / .Net, saving >\$200k on one instance

Google x Duality Lab | *Tensorflow Model Developer* | Purdue

Jan 2023 – May 2023

- Building data pipeline for Maskformer and Mask2former using Google Deeplab2 and Tensorflow
- Generate, decode, and load TFRecords for panoptic segmentation from COCO dataset with Bash and Python
- Apply random-cropping and color jitter to images/masks, create project config and data loaders
- Achieving <0.01% difference between PyTorch and Tensorflow implementations through differential testing

TE Connectivity x ML @ Purdue | *TE AI Cup* | Purdue

Nov 2023 – May 2023

- Achieved 83% accuracy in forecasting sales for 1300+ products using LSTMs, and Time Series Transformers
- Build a framework to study the effects of external economic indicators on model prediction for any time-series data

Autonomous Robotics Club | *Rocket League Software Developer* | Purdue

Apr 2022 – Dec 2022

- Refactor sim to better reflect real-world conditions by randomizing physics dynamics, tuning car properties, and simulating latency with Rospy and ROS

The SunScool App | *Signal Processing Intern* | Sunnyvale, California

Apr 2022 – Aug 2022

- Trim, normalize, and denoise voiceovers from 80+ chapters with noise profiles, High and Low Pass filters
- Adjusted audio volume and determined parameters for audio voice overs with FFmpeg and SOX

PROJECTS / LEADERSHIP

Gesture Controlled HCI

Pytorch • Flask • mongoDB

Jan 2024

Built a continuous learning model to detect hand poses at 30FPS with 95% accuracy, allowing for customizable hand poses. Categorized hand gestures through VLLMs and vector databases. Create custom actions using open-interpreter.

1st Place Purdue BoilerMake X Hackathon Dagshub

Pytorch • MLFlow • DVC

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

ML • 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.

Robotics Mini-Projects

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

SKILLS AND LANGUAGES

Programming Languages: Python, C/C++, Java, TypeScript, C#, Bash, Perl, x86 Assembly, Go, JS, SQL

Frameworks: Pytorch, Tensorflow, OpenCV (Python & C++), RPC, RestFUL APIs

Platforms/Tools: Jira, Bitbucket, Docker, Conda, Catkin, Linux, VS Code, JetBrains IDEs, VIM, Github, Dagshub, Onshape