Andrew Goldberg

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Education

University of California Berkeley 4.0 GPA, Graduating 2026
Electrical Engineering and Computer Science B.S. *Berkeley, CA*
Coursework: Introduction to Machine Learning, Computer Security, Introduction to Artificial Intelligence, Discrete Mathematics and Probability Theory, Data Structures, Computer Architecture, Linear Algebra

Publications

Blox-Net: Generative Design-for-Robot-Assembly using VLM Supervision and Physics Simulation
Andrew Goldberg, Kavish Kondap, Tianshuang Qiu, Zehan Ma, Letian Fu, Justin Kerr, Huang Huang, Kaiyuan Chen, Kuan Fang, Ken Goldberg (submitted to ICRA 2025)

Experience

Undergraduate Researcher Oct. 2023 – Present
Berkeley Artificial Intelligence Research Lab (BAIR), AUTOLab *Berkeley, CA*
- First author of Blox-Net, an LLM system which generates 3D designs based on a text-prompt (ex. "giraffe") using available parts and reliably assembles them with a UR5e robot arm achieving a 98% assembly success rate.
- Built generative design system which uses prompt engineering strategies to integrate feedback from a PyBullet simulation with a Vision Language Model to iteratively improve semantic alignment with a text-prompt and improve construction success rates by 340%.
- Dex-Net 5.0 - Wrote PyTorch dataset, training, evaluation, model implementation, and documentation of Dex-Net GQ-CNN, a method of predicting parallel jaw and suction grasp quality from depth images. Used ONNX to port original TensorFlow model weights to PyTorch for inference. Resulted in improved maintainability and reproducibility over the original TensorFlow 1.15 version which relies on deprecated dependencies.
- Developed a custom Gaussian splatting implementation in NerfStudio with additional grasp embedding.

Robotics Engineer Intern June 2022 – July 2022
Evodyne Robotics *Mountain View, CA*
- Coded new mobile UI with camera support and improved locomotion for two quadruped robotics kits.
- Optimized CAD model of 5-DOF robot arm to print parts 8 times faster and without supports.
- Designed and manufactured cycloidal drive for a stable, durable, 3D printed gear reduction for robot dog leg.
- Removed Raspberry Pi dependency during shortage from dog kit saving $60 per unit by rewriting code for ESP32.
- Taught gears, joints, and CAD fundamentals in Fusion 360 as head teacher for 30 student 3D printing class.

Machine Learning @ Berkeley Aug. 2023 – Present
University of California Berkeley *Berkeley, CA*
- Trained ResNet based solar panel prediction model to predict solar panel productivity. Designed data visualizations of four satellite data weather sources, identifying and correcting coordinate alignment issues. Tested prediction correlations of models trained on different datasets. 3 month long project, 2nd place in ClimateHacks competition.
- Created YOLOv1 object localization homework assignment for CS 198-126 Deep Learning for Visual Data.z
- Built method to obtain a Rubik's Cube's state from images. Used mobile SAM, grounding DINO, and classical CV edge detection techniques for image segmentation and to extract colors and their positions.

Projects

Digital Billboard Graduation Cap | Link | *C++, Arduino, ESP32, HTML, CSS*
- Users connect to a website and submit text to be displayed. After admin approval, the text is displayed on an LED matrix mounted on the grad cap in a custom 3D printed case. Built with ESP32.

3D Print Logger | *Python, SQL, Arduino, C++, Python, REST API, Flask*
- Developed python script using the Octoprint API to log metrics (power consumption, filament usage, print time) about a 3D print in an SQL database. Displays SQL data on a Flask website for convenient remote data access.

Technical Skills

Languages: Python, Java, C, C++, SQL, JavaScript, HTML/CSS
Other Skills: PyTorch, Data Analysis, Computer Vision, 3D Printing, Linux, NeRF, Gaussian Splatting, Robotics