ADHAM ELARABAWY

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EDUCATION

University of California, Berkeley

Electrical Engineering & Computer Science - Regents Scholar Expected Graduation: Fall 2023 / Winter 2024

- *Relevant Courses:* CS61A, CS61B, CS61C, CS184, CS188, CS189, CS127, CS170, CS70, EECS16A, EECS16B, Math53.
- Graduation can be accelerated arbitrarily -- I have all required courses completed.

EXPERIENCE

SCALE AI *Artificial Intelligence Startup* San Francisco, CA

Machine Learning Research Engineer **(Python, PyTorch, Kubernetes, Docker, Celery, AWS)** May 2022 - Present (1 yr.)

- Currently Architect @ Special Projects Team (Forge); leading active research in identity-preserving context/scene/product enrichment using novel generative diffusion models. Architected Scale AI Forge product from inception. Training + fine-tuning large (diffusion + GPT) models.
- Prev. @ Synthetic ML Team; research in selective style-transfer & unpaired image-to-image translation using Diffusion Models, CLIP, and CycleGANs for decreasing sim-to-real gap in hybrid-synthetic 2D + 3D models.
- Interned 3X, now FT Engineer.

GOOGLE *Information Technology* Mountain View, CA

Machine Learning + Software Engineering Intern **(Python, C++)** Feb 2022 - May 2022

- Developed ML model for website description selection as part of Google Search, maintaining 99.5% precision and improving URL coverage by > 27% compared to previous hand-tuned algorithm.

UC Berkeley Research Lab *Prof. Miki Lustig MRI ML Research Lab @ UC Berkeley* Berkeley, CA

Undergraduate Researcher **(Python, PyTorch, Keras)** Aug 2021 - Apr 2023

- Architected a complex-valued Convolutional Neural Network Plug-and-Play denoiser in PyTorch targeted for solving the (2D + Time) inverse MRI problem in a deep unrolled MoDL architecture.
- Advised by Professor. Miki Lustig, Dr. Efrat Shimron, & PhD Student Alfredo De Goyeneche Macaya.

FORMLABS *3D Printing Unicorn Company* Boston, MA

Software Engineering Intern **(Python, Go, C++)** Sept 2020 - Dec 21

- Developed real-time jerk-limited trajectory generation algorithm driven by material and laser optics constraints.
- Enhanced control systems and motion planning for Formlabs FLS/SLA 3D-printers.

PUBLICATIONS + EXTRACURRICULAR

'Direct Inversion' *Optimization-Free Text-Driven Real Image Editing with Diffusion Models* San Diego, CA

First Author Preprint | ***Github Repo*** **(Python, Diffusion Models, Generative ML)** Aug 2022 - Present

- *Abridged Abstract:* Using widely-available generic pre-trained text-to-image diffusion models, we demonstrate the ability to modulate pose, scene, background, style, color, and even racial identity in an extremely flexible manner through a single target text detailing the desired edit.

OPEN-QUADRUPED *Featured and Cited in Northwestern Research Paper (IEEE)* San Diego, CA

Personal Robotic Dog Project **(Python, C++, ROS)** May 2020 - Present

- Conceptualized and 3D-printed robot dog parts from scratch via FDM/SLS 3D-printing.
- Pioneered reinforcement learning on gait using IMU sensor for real-time balancing (Gazebo Physics Engine).
- Deployed object classification and tracking via YOLOv3 neural network trained on custom dataset.
- Implemented 3D environment localization and mapping using Visual ORB-SLAM + LIDAR.

MACHINE LEARNING @ BERKELEY *Machine Learning Organization @ UC Berkeley* Berkeley, CA

Researcher + External Relations Officer **(Python, PyTorch, Keras)** Feb 2020 - Present

- Conducted active machine learning research using autoencoders as an image compression technique in an effort to outperform existing compression methods with 3% improved signal-to-noise reconstruction performance.