LUCAS DIONISOPOULOS

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EDUCATION

University of California, San Diego, San Diego, CA **Sep 2024 – Jun 2026**
M.S. in Computer Science and Engineering: Thesis (AI / Machine Learning)
- ***GPA:*** 4.0 / 4.0. Teaching Assistant (*4 quarters*)
- ***Research:*** Working with Prof. Raj Ammanabrolu on applying reinforcement learning to large language models
- ***Coursework:*** Statistical Natural Language Processing (*A*), Advanced Computer Vision (*A+*), ML for Robotics (*A+*), Systems for ML (*A+*), AI Agents (*A+*), Probabilistic Reasoning & Learning (*A*), Program Synthesis (*A+*)

Self-Directed Study *(Blog with more detail)* **Feb 2023 – Sep 2024**
- ***Textbooks:*** Mathematics for Machine Learning (*Diesenroth*), Introduction to Linear Algebra (*Strang*), Discrete Mathematics (*Rosen*), Introduction to Algorithms (*CLRS*), Operating Systems: Three Easy Pieces (*Arpaci-Dusseau*), Reinforcement Learning (*Sutton & Barto*)
- ***MOOCs:*** MIT Introduction to ML (*6.036*), UW Programming Languages A & B (*Coursera*)
- ***UW-Madison (****Part-time Spring 2024):* Matrix Methods in ML (*A*), Non-Linear Optimization (*Audit*)

Washington University in St. Louis, St. Louis, MO **Aug 2017 - May 2021**
B.S.B.A. Major in Finance, Minor in Computer Science
- ***GPA:*** 4.0 / 4.0. *Valedictorian, Summa Cum Laude*. Teaching Assistant (*6 semesters*)
- ***Faculty-Nominated Awards:*** Poets&Quants 2021 Best & Brightest *(Article)*, John W. Bowyer Award in Finance
- ***Coursework:*** Data Structures & Algorithms (*A+*), Rapid Prototype Development (*A*), Computer Networks (*A+*)

RESEARCH & SELECT PROJECTS

How Reasoning Evolves from Post-Training Data in Sequential Domains *(Link)* **Sep 2025**
- Lead author. Outperformed state-of-the-art open-source reasoning models in chess through SFT and RL on a 7B-parameter language model using custom SFT datasets and RL tasks (trained on NVIDIA A100 and H100 GPUs)
- Involved multi-GPU training (Megatron / FSDP for both SFT and RL), multi-node inference, synthetic data generation, LLM-as-a-judge, custom Docker images, and automated scripts on a production Slurm cluster

Neural Guided A* Search for the ARC-AGI Benchmark *(Link)* **Dec 2024**
- Attempted novel neurosymbolic strategy for the ARC challenge using techniques from program synthesis
- Developed a synthetic data generation pipeline, implemented and trained a custom vision transformer using PyTorch, generated and analyzed semantically meaningful image embeddings from the model, and optimized the custom model to run on various NVIDIA GPUs

Select Projects
- **Dungeon Coder** *(Link)*: Led development on a full-stack webapp (*React, Three.js*) combining image generation and image-to-3D asset models to create custom assets you can place in interactive dungeons or 3D print. Self-hosted computer vision models (NVIDIA L40) with custom Docker images and Flask APIs. Created a dungeon generator to turn a prompt into a custom 3D dungeon using classical algorithms and an LLM agent
- **Reinforcement Learning Driver** *(Link)*: Built and optimized a driving game in Python (*Pygame*) from scratch and trained a reinforcement learning agent using Double Q-learning in PyTorch to navigate unseen tracks

SELECT WORK EXPERIENCE

Contracting **Sep 2024 – Nov 2024**
- **Machine Learning Anomaly Detection** *(Link)*: Developed an anomaly detection system for a San Diego healthtech company. Notable elements include the creation of custom evaluation sets, data cleaning techniques for noisy real-time data, implementation of kernel regression, and creation of interpretable anomaly flags

Financial Technology Partners, San Francisco, CA **Jun 2020 – Jun 2023**
Investment Banking Analyst
- Core developer of operating models, financial projections, valuation & returns analyses, diligence presentations, and large-scale data analyses on client datasets
- Managed teams of analysts on large projects and worked directly with client executives as a key contact
- Developed internal tooling to improve analyst efficiency and led training sessions for incoming analyst classes
- ***Select transaction experience***: Velocity Global $400mm Series B, Circle Internet Financial $25mm Financing

PROGRAMMING SKILLS & OTHER

- **Languages**: Proficient with Python; experience with C, Java, JavaScript/TypeScript, SQL, Triton (GPU kernels), Bash, SML, PHP, Racket, HTML, CSS
- **Software Skills**: AWS, Git, Docker, Anaconda, uv, Linux, Weights & Biases, Hugging Face, CUDA / cuBLAS / NCCL, PyTorch, Scikit-learn, NumPy, Pandas, SSH, Flask, React, Express, object-oriented programming, full-stack development, Microsoft Excel and PowerPoint
- **Volunteering**: Led an initiative in 2021 that cleaned 21 parks by engaging 100+ volunteers in St. Louis *(Link)*
- **Interests**: Rock climbing (*bouldering, sport & traditional*), through-hiking, beekeeping, science fiction
- **Miscellaneous Awards**: Eagle Scout, 6x Nebraska Class-A State Tennis Runner-Up