Robert G. Gambee

Portfolio: https://rgambee.github.io

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Experienced software developer passionate about building safe AI systems for the benefit of all

Professional Experience

Formlabs: Building industry-leading, professional 3D printers in Somerville, MA   2015 to Present
Systems Integration Engineer III

Responsibilities
- Autonomously tackle challenging problems at the interface between hardware and software
- Rapidly shift priorities and gain skills in response to project needs
- Own key printer systems for the entire product cycle, driving them from inception to public release
- Understand complex interactions between printer systems, keeping both details and big picture in mind
- Optimize for printer reliability through robust design and failure mode prediction
- Analyze and visualize printer data to answer pressing questions and inform business decisions
- Mentor junior team members to foster their technical abilities
- Facilitate communication between engineering teams and across departments

Selected Projects
- Project lead of Formlabs' most widely-used internal tool   2023 to Present
  - Understand the workflows of the dozens of engineers who use this system daily
  - Regularly discuss improvements with stakeholders and transform them into concrete specifications
  - Coordinate across multiple teams to complete improvements amid competing priorities
- Senior embedded developer for novel product   2021 to Present
  - Independently developed prototype firmware in Python to support crucial conceptual testing
  - Designed and implemented production algorithms in C++ for three of the most complex systems
  - Thoughtfully crafted powerful yet simple API to control all aspects of product functionality
  - Advised architectural decisions for embedded and desktop software
- Dashboard for plotting live sensor data   2021
  - Independently developed over four days during company hackathon
  - Wrote backend in Go, wrote frontend in JavaScript, streamed data via WebSockets
  - Recognized by the CEO in a company-wide email as one of the most impressive projects that year

Achievements
- Recipient of Formlabs' Perform Award, which recognizes top 10% of employees   2020 and 2023

Personal Projects

Chronicle   January to April, 2023
Web app to keep track of how one spends one's time
- Used Django framework to manage HTTP requests and access SQLite database
- Presented data as a table for sorting and filtering, as well multiple charts for visualization
- Set up automated test and deployment workflows using GitHub Actions

Independent AI Research   April to June, 2023
Reproduction of "The Capacity for Moral Self-Correction in Large Language Models" by Ganguli et al.
- Loaded and processed tens of thousands of samples from three different datasets
- Analyzed bias in model responses according to three different metrics
- Results demonstrated influence of RLHF training compared to prompt engineering

SCAFFOLD   March to June, 2023
Completed as part of AI Safety Camp (3 person team plus advisor)
- Built React web app to generate feedback on one's research ideas using GPT
- Fine tuned model to make its responses more relevant to AI safety research

Software Skills

Proficient
- Python
  - NumPy, SciPy, Pandas, Matplotlib
  - asyncio, Django, Twisted
- C++
- Git
- Jira

Experienced
- PyTorch, scikit-learn
- JavaScript, React, HTML, CSS, Bootstrap
- SQL, BigQuery, Grafana
- Bash

Familiar
- Go
- Rust
- Docker
- Make, CMake
- GitHub Actions

Education

Harvey Mudd College, Claremont, CA
Bachelor of Science in Engineering with High Distinction   2011 to 2015
- GPA: 3.8
- Inducted into Tau Beta Pi, national engineering honor society   2014
- Recognized on Dean's List of top performing students   2012 to 2015
- Advised fellow students on weekly Materials Engineering homework assignments   2014 to 2015

Continuing Education
- NYU's Deep Learning with Prof. Yann LeCun   2022
- Google's Machine Learning Crash Course   2022
- fast.ai's Practical Deep Learning for Coders   2022

Undergraduate Projects

SpaceX, Hawthorne, CA & Harvey Mudd College   2014 to 2015
Recoverable Flight Data Recorder (5 person team)
- Designed housing and selected materials to protect electronics from rocket explosion
- Built and tested prototypes according to SMC-S-016 and other specifications
- Contributed to software for receiving flight data over UDP and saving to SD card

Academic Research, Harvey Mudd College   2014 to 2015
Gas Permeation Across Nanocomposite Polymer Membranes (5 to 8 person team)
- Performed gas permeation experiments on synthesized membranes
- Ran and analyzed molecular simulations containing over ten thousand atoms each
- Wrote grant proposal for Amazon EC2 resources that decreased runtime by an order of magnitude

Sandia National Laboratories, Albuquerque, NM & Harvey Mudd College   2013 to 2014
Measurement of Barium Titanate Nanoparticle Permittivity (5 person team)
- Developed analytical and numerical models for interpretation of experimental data
- Presented work at Materials Research Society meeting as invited speaker
- Project findings were later submitted to several scientific journals for publication

Philanthropy

Giving What We Can
Pledge Member   2022 to Present
I pledge to donate at least 10% of my lifetime income to the charities which will most improve the lives of others.