Robert G. Gambee

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Experienced software engineer passionate about improving the world for future generations

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

- Embedded software 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
  - 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
- Optical calibration for Form 3 and Form 3L 3D printers 2019 to 2020
  - Wrote factory software routines to calibrate thousands of printers
  - Led team effort to speed up automatic recalibration by a factor of five
  - Led validation testing to prove system meets accuracy goals

Achievements

- Received inaugural Perform Award, which recognizes top 10% of employees 2020

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
- Submitted API requests asynchronously, with automatic retries and rate limiting
- 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
- Experienced
  - PyTorch, scikit-learn
  - JavaScript, React, HTML, CSS, Bootstrap
  - SQL
  - Bash
- Familiar
  - Go
  - Rust
  - 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