

# Robert G. Gambee

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**Experienced software engineer passionate about building safe AI systems for the benefit of everyone**

## Professional Experience

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

### 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 entire product cycle, driving them from inception to public release
- 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

- Novel embedded software architecture 2021 to Present
  - Independently developed firmware in Python for a fleet of prototypes
  - Advised architectural decisions for embedded and desktop software
  - Owned many major features during multi-team software sprints
- 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
- Laser pointing calibration for Form 3 and Form 3L 3D printers 2019 to 2020
  - Wrote factory software routines to calibrate thousands of printers
  - Led effort to speed up automatic recalibration by a factor of five
  - Led validation testing to prove system meets accuracy goals
- Resin management for Form 3 and Form 3L 2018 to 2021
  - Implemented algorithm to maintain consistent resin level despite variable sensor readings
  - Overhauled resin tracking and dispense logic to improve customer experience
  - Created customer maintenance routine to prevent hundreds of costly printer returns

### 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

**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
    - Matplotlib, NumPy, SciPy, Pandas
    - asyncio, Django, Twisted
  - C++
  - Git
- Experienced
  - PyTorch, scikit-learn
  - JavaScript, React, HTML, CSS, Bootstrap
  - SQL
  - Bash
- Familiar
  - Go
  - Rust
  - 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