

Avi Gupta

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<https://racecrafter.github.io>

Important Links

GitHub: <https://github.com/racecrafter>

LinkedIn: <https://www.linkedin.com/in/avi-gupta-ag/>

Blogs: <https://medium.com/@savim2020> and <https://medium.com/hackerlog>

YouTube: <https://www.youtube.com/channel/UCbfng4kyQt2QEzXktgCECDw>

Personal Website: <https://xinf.dev/>

Work Experience

Smart Beej

May 2023 - August 2023

- Helped to set up microcomputers to manage modular, hydroponics-based farms in India in order to combat the effect of climate change and produce food more sustainably. Tasks involved:
- Discussing and designing remote sensor management frameworks with the core engineering team
- Migrating the on-farm software from a proprietary OS to Amazon Web Services' Greengrass to manage programs remotely
- Calibrating on-site sensors at farms in India, and developing algorithms to process raw sensor input into actual readings for temperature, humidity, etc.
- Data collection on-device and extraction to cloud-based data warehouse
- Work continued over summer and into the fall of 2023 to get the devices production ready

Gradzilla

May 2024 - Present

- Created a web application that used generative AI and real-world college data to aid others in the college selection process.
- <https://gradzilla.app>
- Video demo: <https://youtu.be/BgpLiC7i-l8>
 - More natural search using generative AI (Google Gemini) and Retrieval-Augmented Generation
 - Contains course catalogs
 - Can keep context within a chat session
- Wrote backend in Spring Boot & Flask
 - Deployed on Cloud Run
 - Using Cloud Datastore for storage of colleges and courses
 - Using Cloud Firestore for storage of users, chats, bookmarks, and data vectors
- Wrote in Flutter/Dart
 - Using Cloud Storage to store web files
 - Using Google Authentication to manage log-ins

XINF**November 2022 - Present**

- Created a suite of micro utilities that perform common, boilerplate tasks for developers through a simple REST API.
- <https://xinf.dev/>
- A REST api to help app writers conveniently get common pieces of information.
- Written in Go, deployed on Cloud run, using BigQuery for analytics.
- Some of these functions are being used by other developers around the world.

Education

- College Freshman at the University of Maryland - College park
 - Majoring in Computer Science with a focus in Machine Learning
 - Part of UMD's Tactus Choir
- High School Graduate (Rutgers Preparatory School, Somerset, NJ, USA)
- GPA: 4.22 (weighted)
 - Relevant courses: AP Computer Science, Advanced Software Design, AP Calculus AB, AP Physics, AP Environmental Science
- ACSL (American Computer Science League)
 - Finalist for 4 years in a row
 - 2019: Team won first place in New Jersey in the Junior Division, 7th in world competition
- MEGA Hackathon 2022
 - Won best high school project
 - Official website: <https://megahack.tech/>

Skills

Java/Spring Boot, Go, Dart/Flutter, Python, Kotlin, Javascript, Google Cloud Platform, LaTeX, VsCode, IntelliJ, GitHub, Xcode, Swift/SwiftUI, Google Docs, Processing(.pde), Neural Networks, Generative AI

- LaTeX example:
https://github.com/racecraft/racecraft.github.io/blob/main/latex_example.pdf

Relevant Projects

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Neural Networks

January 2024

- https://github.com/racecrafter/neural_net_book: python project based off of the Neural Networks From Scratch book: <https://nnfs.io/>
- No neural network libraries used (PyTorch, TensorFlow), only NumPy and matplotlib
- Created various LLM models

Teacher, Youth Coding Foundation

May 2022 - June 2023

- Collaborated with two other classmates to create a Python programming course. The course contained slides and sample code to teach middle schoolers a 10-day course for Python.
- Link to slides:
https://drive.google.com/drive/folders/1pwl8gpP6Cn3MLrQ_ND-bh_e4uEnYPyV0?usp=sharing

Image edge detection

- Wrote a program that detects edges in images using the Processing Language. This was done by applying a basic matrix transformation on the underlying image.
- Link to blog post: <https://medium.com/hackerlog/edge-detection-4d42ca234dfb>

"Useless" Java**June 2022 - August 2022**

- Consistently uploaded interesting pieces of code written in Java & Kotlin over the course of the Summer of 2022. Supplemented code with blog posts and Youtube videos explaining and demonstrating the overall structure and functionality of each day.
- Link to GitHub <https://github.com/racecrafttr/UselessJava>
- Blog series on <https://medium.com/@savim2020>
- Focused on:
 - Messing with Libraries
 - String manipulation
 - Esoteric Programming Language Program Generation
 - Making the code as useless as possible

Untitled App (In progress)**July 2022 - Present**

- Location-based social media app that has the following functionality
 - Asynchronous access to location data
 - Posting and retrieval of social media posts
 - Liking and like counting
 - Reporting with removal of content after certain number of reports
- Backend written in Spring Boot
 - Deployed on Cloud Run
 - Using Cloud Datastore for storage of messages
 - Using BigQuery for analytics
 - Using Cloud Storage for image and large object storage
- Frontend written in Flutter/Dart

Stay Safe (In progress)**August 2023 - Present**

- App that allows administrators of commercial/educational facilities to quickly send alerts to others
 - Alerts can refer to any sort of emergency, such as medical, criminal, etc.
- Backend written in Spring boot
- Frontend written in Flutter/Dart

Interactive Series

- Interactive, visual programs
- Exploring use of Computer Science as Art
- Written in the Processing Language
- Series on <https://medium.com/hackerlog>

For fun

In general

- Juggling
- Proficiency in written and spoken french
- Learning Japanese and Hindi

High school

- Cross Country running
- Member of school choirs
- Cast member in school-run musicals for three years in a row
- Participant in School Cultural Shows
- Coding in my fun time
- Ran the Chess Club at school

College

- Member of school choirs

Other information

- United states citizen