Vikram Bala

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Education

The University of Pennsylvania, Philadelphia, PA August 2020 – May 2024

- *GPA:* 4.0/4.0, ACT 36/36, BSE in Computer Engineering with intended Minor in Mathematics
- *Relevant Coursework:* Java/OCaml Programming (A+), Data Structures & Algorithms (TBD), Big Data Analytics (TBD), Discrete Math (A), Linear Algebra (A+) | *Awards:* 2019 PicoCTF Cybersecurity Competition Top 50, 11,000+ teams

Professional Experience

Johns Hopkins Applied Physics Laboratory (APL), Laurel, MD June 2021 – August 2021
Software Engineering Intern – Force Projection Sector

- Designed and implemented an anomaly detection & behavior prediction algorithm with C++ & Google Protocol Buffers.
- Integrated algorithm on a service-oriented architecture with unit testing in GTest and employing Matlab for data generation.
- Supported visualization for flight data by creating filtering tools with ReactJS and visualization algorithms in Typescript.
- Optimized build environment by creating/refactoring CMake files and gained experience working with CentOS/Linux.
- Led onboarding for new employees as part of knowledge-sharing and effective transition into project underway.

Brainwaive LLC, Huntsville, Alabama September 2020 – March 2021
Software Engineering Intern and Geospatial Engineer - Ethar Augmented Reality (AR)

- Spearheaded the implementation of a geospatial wayfinding and localization system for the Opus AR Platform.
- Researched 40+ possible Geospatial vendor SDK solutions and presented chosen solutions candidates to CEO.
- Developed an AR app content management/delivery system with C# scripting, Unity, and Geospatial vendor SDKs.
- Implemented persistent content, touch-based object manipulation, REST API integration for online content.

Penn Electric Racing, Philadelphia, PA January 2021 - Present
Software/Electrical Engineer (Team builds our own electric racecar to compete in the FSAE competition)

- Leading embedded software/electrical design of 112-cell battery balancing board with isoSPI communication capability.
- Spearheaded onboarding program for 20 rookies with series of interactive presentations, projects, & performance reviews.
- Learned fundamentals of PCB design via schematic design, routing, and review of own Brake System Plausibility Device.

Leadership Experience

Penn Engineering Council, Philadelphia, PA January 2021 - Present
Professional Development Committee – Member, Elected PEC Tri-Board Council Representative

- Organized and led a Q&A panel with speakers from different areas of the tech/engineering industry for student body.
- Elected to be the PEC representative at engineering Tri-Board council. Duties include planning new student orientation.

Teaching Assistant – CIS120, Philadelphia, PA September 2021 - Present
Programming Languages and Techniques I

- Lead weekly recitations for 20+ students, grade assignments, facilitate code reviews, hold weekly office hours.
- Teach concepts including functional/object-oriented programming in OCaml/Java, GUI programming, and algorithms.

Projects

Penn Course Swap (HTML5, CSS, Bootstrap, Python/Flask, SQLite) - https://github.com/vbala29/PennCourseSwap

- Created a website and email notification service to help students swap courses to get into closed courses at Penn.

Connect-4 AI and TCP Multithreaded Login Server (Java, Java Swing) - https://github.com/vbala29/TCP-Connect-4-AI

- Created a minimax based Connect-4 AI and TCP standalone login server for a Java Swing game application.

Flight Radar (Java, Arduino MCU/IDE, Processing) - https://github.com/vbala29/ADS-B-Arduino-Flight-Radar

- Created/built a physical flight radar display using ADS-B data to return live information about aircraft in a lat/long region.

Twitter Hashtag Summarizer (Python, HTML) - https://github.com/vbala29/Twitter_Summarizer

- Led a team that designed/implemented a crowdsourced solution to summarize why a hashtag on Twitter was trending.

Skills and Interests

Programming Languages: Java, C++, Python, SQL, HTML5, CSS, OCaml, Arduino IDE, LaTeX
Frameworks: Apache Spark, Python Flask, Java Swing, Bootstrap, Pandas | **Engineering Skills:** CodePath Cybersecurity Certification, PCB design/routing, Arduino/NodeMCU, Soldering | **Technical Skills**: Linux (RHEL/CentOS), Git/GitLab (CI/CD), RESTful APIs, GTest, Google Protocol Buffers, Vim, Altium Designer, Unity