

Fardeen Bablu

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EDUCATION

Vanderbilt University — Nashville, TN

May 2026

Bachelor of Science in Computer Science, Mathematics, Public Health

Courses: Data Structures & Algorithms, Computer Networks, Software Engineering, Operating Systems, Linear Algebra

Activities: Head Resident Advisor, Entrepreneurship Society, First Generation VU, Assoc. of Bengali Students

SKILLS

Programming: Python, JavaScript/TypeScript, Java, C/C++, R, SQL

Libraries: PyTorch, TensorFlow, NumPy, Scikit-learn, OpenCV, Matplotlib, React, Node.js, Tailwind CSS

Tools: Figma, Git, Docker, Kubernetes, CMake, AWS (S3, CloudFront, Lambda), GCP (BigQuery ML, Cloud Run), CI/CD

EXPERIENCE

Teaching Assistant

Nashville, TN

Vanderbilt University, Department of Computer Science

Jan. 2025 – Present

- Led 12 hours/week of office hours for 50+ students on Java fundamentals and general debugging, OOP, & algorithm design.
- Graded 10+ coding assignments per cycle via GitHub & Autograder; improved student resubmissions by 30%.
- Supported 8 Software Engineering course teams; advised on design patterns, testing, and full-stack development.

Machine Learning Engineer Intern

Nashville, TN

Vanderbilt University, Department of Computer Science

May 2025 – Aug. 2025

- Built cross-species tissue analysis pipeline in PyTorch using ResNet50 and PCA, achieving 94.1% similarity.
- Designed multi-modal training framework with 4 modes and custom Focal/Dice loss with 4.8 times class weighting.
- Developed evaluation suite benchmarking U-Net, PSPNet, and DeepLabv3+ using IoU, Dice, and Pixel Accuracy.

Software Engineering Intern

Washington, DC

Jenner & Block LLP

June 2024 – Aug. 2024

- Led digital transformation initiative for 50+ attorneys, automating workflows to reduce onboarding costs by 40%.
- Configured Cisco Meraki Access Points across office; improved wireless stability & cut IT tickets by 25%.
- Collaborated with cross-functional teams to integrate 5+ enterprise applications, streamlining operations.

PROJECTS

DormDash - Peer-to-Peer Campus Delivery - React Native, TypeScript, Firebase, Express.js – [GitHub](#) May 2025

- Built mobile app connecting 40+ restaurants to 31 dorms; implemented offline-first sync via Firebase/AsyncStorage.
- Developed routing using Haversine formula calculating ETAs across 3 travel modes with landmark waypoints.
- Engineered real-time tracking via location subscriptions, order state machine (4 transitions), & courier updates.

Spevents.live - Real-time Photo Wall - React, Three.js, Tailwind CSS, AWS S3 – [Live](#)

Jan. 2025

- Launched serverless platform with React Three Fiber and S3 + CloudFront, serving 200+ photos at 4 events.
- Created REST API on Vercel with Firebase Auth/Firestore and QR-based zero-download uploads.
- Designed 5 displays (Grid, Slideshow, 3D, Parallax) with Framer Motion and Hugging Face moderation.

Healthcare Network Analysis - Python, NetworkX, Pandas – [GitHub](#)

Nov. 2024

- Modeled healthcare relationships across 50 states using similarity matrices with exponential scaling and 0.7+ threshold.
- Implemented Louvain clustering; computed degree, betweenness, and eigenvector centrality to identify bridge states.
- Built ETL pipeline processing 3 years of Census and ONC data to compute provider density metrics (CV = 13.44%).

QuizLITE - Flashcard Desktop App - C++17, SQLite, Qt6, CMake, GTest – [GitHub](#)

Aug. 2024

- Built open-source flashcard app with 3 adaptive study modes prioritizing low-accuracy questions via spaced repetition.
- Architected SQLite backend using singleton pattern for CRUD operations with per-question accuracy tracking.
- Configured GitHub Actions CI/CD running 35+ GoogleTest cases across Ubuntu/macOS with clang-format linting.

AWARDS

Amazon Mission Autonomy Hackathon 2025 - 2nd Place (\$15K Prize) - [Pitch](#) | [Github](#)

Nashville, TN

HUSH-MESH, an AWS-powered autonomous maritime defense network with RF-silent drones for routing.

Vanderbilt X Ironsite Hackathon 2025 - 3rd Place (\$2.5K Prize) - [Pitch](#) | [Github](#)

Nashville, TN

Built an object permanence model to track blocked objects, boosting accuracy from 12% to 94%.

Google Solutions Challenge 2025 - 1st Place - [Pitch](#) | [Github](#)

New York, NY

Gemicast, a real-time outage-risk dashboard + predictive alerts, inspired by recent Tennessee floods.

Accenture Innovation Challenge 2024 - Top 5 National Finalist - [Pitch](#)

Washington, DC

NPForward, an AR/VR “Pokémon Go” style park collectibles + rewards to boost Gen-Z engagement.