Arnab Dev

+1 469 947 4379 | official.arnabdev@gmail.com | arnabdev.com| Linkedin: in/arnabdev | Github: arnabdev1

EDUCATION

The University of Texas at Dallas, Richardson, TX   August 2024 – May 2027
Bachelor of Science, Computer Science   **GPA: 3.8**
- Student of the Hobson Wildenthal Honors College, Dean's List, Full-Tuition AES scholarship recipient.
- Relevant Coursework: Data Structures and Algorithmic Analysis, Computer Architecture, UNIX Programming.

PUBLICATIONS

 "Variability-Aware Fuzzing" Meah Tahmeed Ahmed, **Arnab Dev**, Shiyi Wei, ICSE 2026.

WORK EXPERIENCE

Research Assistant   October 2024 – Present
University of Texas at Dallas (Richardson, Texas)
- Engineered VAFuzz, **a high-performance fuzzer (4000 executions/second)** extended from AFL++. Implementing C/C++ configuration and input co-execution algorithm for presence-condition seed queues and variability-aware mutations. Achieved **superior code coverage on 84% of benchmark programs.**
- Extending the Google FuzzBench framework to support compile-time configurability, utilizing Docker containers to orchestrate scalable variability-aware fuzzing experiments.
- Developed complex Bash and Python automation scripts to manage the build, execution, and data extraction of large-scale fuzzing campaigns Working on dynamic analysis and fuzzing at Dr. Shiyi Wei's lab.

Software Developer Intern   June 2024 – August 2024
Bondstein Technologies Limited (Dhaka, Bangladesh)
- Developed scalable, responsive web interfaces using Next.js and Tailwind CSS, integrating with Node.js backends.
- Optimized rendering paths by implementing memoization strategies (React.memo, useMemo) and code-splitting, resulting in **a 40% reduction in component re-renders and a 1.5s decrease in Time to Interactive (TTI).**
- Refactored legacy API consumption patterns to use efficient data fetching hooks, **reducing redundant network requests by 25%** and improving application state stability.
- Automated deployment workflows via GitHub Actions CI/CD pipelines, **reducing build times by 30%.**

CS Teaching Assistant (Python)   October 2022 – December 2023
Edification Coaching Center (Dhaka, Bangladesh)

PROJECTS

Sprinklify | React, Spring Boot, Flask, Python, OpenCV, MongoDB   October 2025
- Built an ML-powered smart irrigation system that converts natural language and drone imagery into optimized sprinkler rotation and flow plans, **reducing water usage by 30–40% while maintaining 95%+ lawn coverage** accuracy through geometric modeling and learned control.
- Designed a full-stack, dual-backend architecture with real-time simulation and an interactive React dashboard, integrating optimization + PPO-based ML smoothing to generate adaptive watering plans.

NeuroSync | Next.js, Node.js, React, Flask, PyTorch, LangChain, LangGraph, Featherless.ai   February 2026
- Engineered a closed-loop Brain-Computer Interface (BCI) using a Muse 2 gateway to stream real-time EEG/PPG data, training a 1D-CNN and LSTM pipeline to predict cognitive fatigue with a 30-minute forecasting window.
- Architected a Mixture-of-Agents (MoA) intervention system in Node.js and LangGraph via the Featherless.ai API, dynamically routing between 3 LLMs (DeepSeek, Qwen, KimiK2) to autonomously block distracting applications.

TECHNICAL SKILLS

Languages: Python, C, C++, JavaScript, TypeScript, Java, SQL (MySQL, PostgreSQL), NoSQL (MongoDB), Bash
Frameworks: HTML, CSS (Tailwind, SCSS, Bootstrap), React, Next.js, Node.js, Flask, Spring Boot, Spring AI
Developer Tools: Azure, Git, Docker, Postman, Figma, Google Cloud Platform, Visual Studio, PyCharm, IntelliJ
Libraries: pandas, NumPy, Matplotlib, Vercel, scikit-learn

LEADERSHIP & INVOLVEMENT

Next Initiative Foundation, Founder, President   August 2020 – August 2024
- Recruited and **led 300+ volunteers, 4000+ participants**. Featured on national television twice.