Arnav Jindal

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EDUCATION

Duke University — Durham, NC
Bachelor of Science - Computer Science and Economics, Minor in Journalism — *August 2022 - May 2026*

Relevant Courses: Data Structures, Databases, Computer Architecture, Discrete Math, Microeconomics, Macroeconomics, Probability, Multivariable Calculus, Linear Algebra, Computer Graphics, Analysis of Algorithms, Audio+Image Processing, Functional Programming

Organizations: Duke Student Gov, Duke Chronicle (Newspaper), Duke Applied ML, HackDuke, Computer Architecture TA, Duke IT Board

PROFESSIONAL EXPERIENCE

Amazon Inc — Seattle, Wa
Software Engineering Intern — *May 2024 - August 2024*
- **Internal Command Line Tool**: Developed an internal command line tool, distributed through Amazon's package manager that streamlined accessibility testing by triggering automated UI scans, reducing manual testing time by 40%.
- **AWS distributed server-less**: Engineered AWS infrastructure to optimize scanner lambdas through websocket proxies, resulting in a 50% reduction in scan times and a 25% decrease in operational costs.
- **Production Ready**: Implemented blue-green deployment strategies and CI/CD pipelines with integrated alarms and metrics collection, enhancing the observability and reliability of the production application stack.

TrendUp AI (YCOMB 2023) — Remote
Software Engineering Intern - Full Stack — *June 2023 - August 2023*
- **Backend AI Engineering**: Programmed vector stores to scrape and add datasets for ChatGPT querying via APIs. Developed user flows to create and post content powered by TrendUp's AI tools.
- **Data Pipelines**: Deployed Backend Pipelines to ingest and process data in the background reducing compute costs by 30% and expanding data stored by 4x.

Duke University Department of Computer Science — Durham,NC
Research Assistant - Computer Systems — *June 2023 - August 2023*
- **Computer Systems Research**: Developed mRPC with Dr Matthew Lentz and Dr Danyang Zhuo, a managed and more efficient gRPC alternative featuring centralized rust proxies and better marshaling for 100% faster RPC calls.
- **Building Frontend**: Engineered a user-friendly Python frontend using Pyo3 and Rust FFI; Wrote documentation with examples for developers. Wrote a research paper with findings.

Reachbest — Remote
Software Development Intern - Full Stack — *June 2022 - August 2022*
- **College Admissions Webapp**: Created dashboard for students to visualize their profile with improved data viz. Automated CI pipelines to cut deployment times by 50%

IBM — Bangalore, India
Research Intern - Artificial Intelligence — *March 2021 - April 2022*
- **Created AI-powered counselling service**: Integrated IBM technology to create a mental health counselling chatbot for the NGO Emancipation to assist victims of human trafficking. Bot helped 9000+ children. Engineered a performant frontend for rural low-bandwidth connections.

PROJECTS

- **Dagpi - full stack SaaS platform for image manipulation with monetization**: Webapp featuring Next.js frontend and backend in TypeScript Express.js. Image manipulation microservice in Python FastAPI, auth/metric microservices in Actix Rust. All networked together with docker and nginx on kubernetes. Monitored by Grafana and Prometheus. PostgreSQL and TimescaleDb databases with AWS glacier automated backups. Stripe and PayPal payment gateways for subscriptions.
- **Polaroid - image manipulation library in python**: Various Rust libraries integrated to Python with FFI. Features CI to build cross-platform wheels using Maturin. Core FFI done with Pyo3 and features stubs and automatic documentation generation. Also features faster filesystem access, IO operations, and pixel matrix computation than competing libraries.
- **Esoteric Languages - niche programming languages**: Built 2 esoteric programming languages. Udymts features a Rust-based CLI and compiler that turns udymts files into Python to execute. PokeType is an expression evaluation language built with rply and features lexical analysis, tokenization, compilation, interpretation and more.
- **FainAI - AI algorithms teacher**: Used browser automation to scrape course material and streamed lecture recordings to create embedded vector database. Fine-tuned LLaMA2 LLM on database to build algorothims and built Markdown Chat UI. Teaching tool was recognized by the professor of algorithms course
- **BlueRide - IOS carpooling app**: Built a full-stack IOS app to allow students to sign-up and be matched for rides to airport. Incorporated custom authentication and greedy matching on typescript backend. Used by over 100 students(5% of student body) and matched 200+ rides.

SKILLS

- **Languages**: Python, Rust, TypeScript, Java, JavaScript, SQL, Bash, Deno, MIPS, C++
- **Libraries/Frameworks**: Next.js, Node.js, Hugo, React, Flask, FastAPI, Actix, Express.js, PostgreSQL, Redis, MongoDB
- **Tools/Platforms**: Git, Jest, Webpack, Heroku, AWS, GCP, Docker, Kubernetes, Cloudflare, Vercel, Grafana, Prometheus, RPC, LangChain, Vector Stores