Arayna Saxena

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Education

Georgia Institute of Technology Aug 2024 – Dec 2027

B.S. in Computer Science, Threads: Intelligence & Systems Architecture *Atlanta, GA*

- **Coursework:** Data Structures & Algorithms, Machine Learning, Artificial Intelligence, Database Systems, Object-Oriented Programming, Computer Organization
- **Study Abroad:** University of Oxford, UK (May – Aug 2025)

Technical Skills

Languages: Python, TypeScript, JavaScript (ES6+), Java, C, SQL, HTML/CSS
Frameworks: React, Next.js, Django, Django REST Framework, Flask, Node.js, Tailwind CSS
AI/ML: PyTorch, scikit-learn, XGBoost, Gemini API, YOLOv8, MediaPipe, OpenCV, Pandas, NumPy, Bi-LSTM
Databases & Tools: PostgreSQL, MySQL, Firebase/Firestore, SQLite, Redis, Docker, REST APIs, WebSockets, Stripe, Git/GitHub, GitHub Actions, Vite

Experience

GRIP Research Intern, CIPHER Lab May 2026 – Aug 2026

Georgia Tech Research Institute (GTRI) | Resilient Multi-Agent AI Systems *Atlanta, GA*

- Building **PROPAGATOR**, a framework measuring how prompt-injection attacks propagate through multi-agent LLM systems and optimally placing a limited budget of guardrails to contain them (GTRI agentic-AI security research)
- Extended a healthcare multi-agent LLM system from 5 to 24 agents on Microsoft Agent Framework using async Python, scoped tool-calling, Docker-sandboxed code execution, and MySQL, modeling untrusted inputs, shared memory, and egress sinks as a realistic attack surface
- Designed the agent-to-agent propagation topology and a metadata layer decoupling an agent's importance from its connectivity, breaking naive most-connected-node defenses; implemented a persistent shared-memory store to make memory-poisoning measurable
- Developing a per-edge injection-measurement harness and tiered node hardening to fit a propagation model, benchmarked against centrality, min-cut, and learned-defense baselines under an adaptive adversary; **co-authored paper in progress**

AI Engineer, AltaDX Jan 2026 – Present

Production Multi-Agent System *Remote*

- Diagnosed agent effectiveness across a 616MB production dataset spanning 4 tenants and 30K members, exposing that **41% of sends occurred past the 10th touch at near-zero conversion** and setting the optimization roadmap presented to stakeholders
- Building an AI observability layer over a production multi-agent system of SMS distribution and concierge agents on the OMAP platform, instrumenting live agent behavior to surface optimization signals and flag failure modes in real time
- Designing a recommendation engine that selects outreach channel and timing per member from purchase-history and payment-response signals, replacing static schedules with a closed feedback loop that promotes validated rules into the live agent

Lead Developer, GSI Proficiency Testing Platform Aug 2025 – May 2026

Geosynthetic Institute × Georgia Tech | Advised by Dr. N. Roy & Prof. D. Frost *Atlanta, GA*

- Architected a full-stack platform on Django 4.2, Django REST Framework, React 18, TypeScript, and PostgreSQL 16, replacing a decade-long manual workflow for **100+ accredited labs nationwide**, with staging fully deployed and verified
- Built role-based access control, a submission state machine, and audit logging via before/after JSON snapshots inside `transaction.atomic()` blocks, scoping every request by `lab_id` and `cycle_id` under enforced mutual exclusion
- Secured the platform with TLS, HSTS, CORS, CSRF, and cache-based rate limiting; ran **400+ automated tests** plus pip-audit and npm audit on GitHub Actions CI, with Sentry tracking and PII scrubbing

Co-Founder & Software Engineer, DoorTix Jul 2025 – Present

Delaware C-Corp | GT InVenture Prize 2026 People's Choice ($5K) *Atlanta, GA*

- Shipped a buyer-side ticket-concierge platform on Next.js 15, React 18, TypeScript, Firebase Cloud Functions, and Firestore that monitors 5+ marketplaces and auto-executes purchases at user-set price targets, powering **$8K+ GMV in 4 months** with zero paid marketing
- Built an ML pricing model recommending bid prices that maximize the probability of securing tickets while minimizing buyer cost, learning from live marketplace availability and historical sale data
- Engineered a Stripe authorize-then-capture flow with email-verification auth, an admin fulfillment dashboard, and real-time order notifications
- Integrated **Ticket Evolution and VictoryLive** inventory for below-market pricing; led partnership discussions with Vivid Seats and Automatiq; won **People's Choice ($5K)** at GT InVenture Prize 2026 (aired on GPB)

Undergraduate Researcher, PopSign Technologies Jan 2025 – Aug 2025

Sponsored by Google & NTID *Atlanta, GA*

- Benchmarked 4 production CV models (OpenPose, AlphaPose, BlazePose, YOLOv8) on ASL fingerspelling accuracy and latency, selecting MediaPipe Hands for a mobile game targeting **10K+ users**
- Engineered a 3D landmark visualization system processing 496 HDF5 datasets at 553 points per frame on Python, Plotly.js, and NumPy, **cutting manual analysis from 100+ hours to minutes**
- Trained a Bi-LSTM sign-language classifier with drop-frame detection, class balancing, and temporal smoothing for production readiness

Projects

Flight Delay Prediction | *scikit-learn, XGBoost, Random Forest, Pandas* Feb 2025

- Built a three-model classification pipeline on **500K U.S. BTS records** with 791 engineered features; caught an **accuracy paradox** where 77% headline accuracy masked near-zero minority-class recall, then used macro F1 and per-class AUROC to select the operationally correct model and deployed a live side-by-side predictor

JackSport | *React, YOLOv8, Gemini API, WebSockets, Tailwind CSS* HackGT12, Oct 2025

- Built sports-intelligence platform with click-to-query player detection linking live video to AI-generated metrics