Geetansh Gambhir

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EDUCATION

University of Wisconsin - Madison | BS in Computer Science, BS in Mathematics May 2028

- GPA: 3.7/4.0
- **Coursework:** Operating Systems, Computer Networks, Distributed Systems, Algorithms, Stochastic Processes

EXPERIENCE

Software Engineer Intern | *Crebit Pay Inc.* | *a16z Speedrun SR006* | *Chicago, IL* May 2026 - Aug 2026

- Scaled payment infrastructure to US$3M+ in monthly foreign exchange (FX) volume, integrating KYC verification, virtual wallet creation, and external account linking into a unified transaction pipeline.
- Developed an FX volatility prediction system for USD/MXN forwards, integrating macroeconomic indicators and NLP-based news sentiment to assess confidence in the Mexican Peso.
- Built a data aggregation system pulling MXN and BRL futures quotes across multiple providers and contract months, serving as the quantitative baseline for volatility modeling.

Peer Mentor / Teaching Assistant | *COMP SCI 544* | *University of Wisconsin - Madison* Jan 2026 - Present

- Integrated an AI-powered code review pipeline into the course autograder using Agno, an LLM agent orchestration framework, automatically posting structured feedback as GitLab merge request comments.
- Held weekly office hours debugging student distributed systems projects, covering Kafka pipelines, Cassandra data modeling, PySpark analytics, and GCP infrastructure.
- Reinforced distributed systems fundamentals spanning fault tolerance, data partitioning, replication, containerization, and concurrent programming across weekly student-facing sessions.

Undergraduate Research Assistant | *Original Digital Entomology Lab* Feb 2026 - Present

- Built a web tool to estimate power requirements for IoT field experiments using device configuration and the NASA POWER API for location-based solar data.
- Built a LoRA-based mesh network for low-power agricultural IoT devices to optimize data transmission range/throughput.

PROJECTS

Embedded Mesh Network | *C++, PlatformIO*

- Built a mesh network to ensure reliable delivery and maximize throughput across embedded agricultural devices.
- Designed a routing protocol with a next-hop routing table to avoid full path storage on memory-constrained nodes.
- Developed a two-phase commit protocol and recursive acknowledgment propagation on subtrees to ensure schedule synchronization across all nodes before network execution.
- Created a multi-type packet protocol supporting requests, responses, and acknowledgments to standardize communication across the network.

Low-Latency Service Proxy | *Go, eBPF*

- Developed a service proxy to benchmark TCP, gRPC, and QUIC, utilizing green thread concurrency, connection pooling, and load balancing to measure multiplexing efficiency and head-of-line blocking behavior.
- Stress-tested protocol resilience by introducing simulated packet loss and jitter, measuring performance degradation across network models under real-world conditions.
- Utilized asynchronous I/O batching and implemented a kernel bypass to quantify the kernel's overhead on connections.
- Implemented kernel-level observability with eBPF probes and flamegraphs to surface latency invisible to application-layer measurement.

MapReduce | *Python, Go, React, Typescript*

- Designed a distributed MapReduce system using a Go coordinator to concurrently manage parallel Python workers across large datasets.
- Implemented a lease mechanism tracking per-task progress and requeueing stalled jobs for fault-tolerant job completion.
- Built a real-time task monitor and file upload interface for visibility into worker status and job progress.

TECHNOLOGIES

Languages: Go, C, C++, Python, Java, SQL, TypeScript, JavaScript

Technologies: eBPF, gRPC, Docker, Kubernetes, HDFS, Spark, Cassandra, Kafka, Redis, PostgreSQL, GCP, AWS, React, Axios