ANKIT KUMAR

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PROFESSIONAL SUMMARY

Staff-level Software Engineer with 10+ years of experience designing, implementing, and scaling high-performance distributed systems across finance and technology sectors. Proven expertise in system architecture, complex business challenges, and financial services infrastructure at Morgan Stanley, Amazon, and leading fintech companies. Demonstrated leadership in mentoring engineers, driving technical decisions, and delivering scalable solutions for clearing, settlement, and trading platforms.

TECHNICAL SKILLS

Programming Languages: Java, C++, C, Golang (learning), Rust, Haskell
System Architecture: Distributed Systems, Microservices, Scalability, High-Performance Services, API Design
Technologies: gRPC, PostgreSQL, Kafka, Redis, Docker, Kubernetes, Spring Framework
Financial Services: Trading Platforms, Clearing Settlement, Back Office Systems, Derivatives, Payment Systems
Development: Git, CI/CD, DevOps, System Design, Performance Optimization, Technical Leadership
Specializations: Software Verification, Security Analysis, Dataflow Analysis, Complex Business Solutions

PROFESSIONAL EXPERIENCE

Applied Scientist Intern — Amazon — Santa Clara, CA — Summer 2025

- Led design and architecture of complex code generation system handling vast data volumes across distributed infrastructure
- Architected scalable Java-to-Rust translation framework with focus on system reliability and performance optimization
- Mentored team members on technical standards and best practices for enterprise-scale software engineering
- Technologies: Java, Rust, Distributed Systems, Performance Optimization

Member of Technical Staff, Intern — Rivos Inc. — Portland, OR — Summer 2023

- Architected comprehensive verification framework for complex system security properties, achieving 10x performance improvement
- Led system design discussions and made architectural decisions for high-performance computing infrastructure
- Solved complex, systemic issues requiring innovative approach and deep understanding of system architecture
- Technologies: System Architecture, Performance Optimization, Security Systems

Applied Scientist Intern — Amazon — Minneapolis, MN — Summer 2022

- Engineered enterprise-scale distributed system for sensitive data tracking across cloud infrastructure
- Designed and implemented scalable microservices architecture handling billions of transactions
- Led technical communication with stakeholders, driving consensus on complex technical concepts
- Technologies: Java, Distributed Systems, Microservices, Cloud Infrastructure

Software Development Engineer II — Olacabs — Bengaluru, India — 2012-2014

- Led architecture and implementation of high-volume transaction processing system handling millions of daily payments

- Designed scalable payment and settlement infrastructure with focus on reliability and user experience
- Mentored engineering team through full project lifecycle, delivering impactful fintech solutions
- Optimized system performance, reducing crashes by 60% through systematic debugging and architectural improvements
- Technologies: Java, Distributed Systems, Payment Processing, API Design

Associate — Morgan Stanley Advantage Services — Mumbai, India — 2010-2012

- Led architectural transformation of legacy derivatives trading platform for multi-regional clearing and settlement
- Designed and implemented scalable back office systems supporting billions in daily trading volume
- Architected distributed system expansion to Hong Kong and Singapore markets, doubling transaction capacity
- Collaborated with financial services teams on complex business challenges in clearing and settlement processes
- Technologies: Java, Spring Framework, Distributed Systems, Financial Services Infrastructure

EDUCATION

PhD in Computer Science — Northeastern University — Boston, MA — 2018-2025

- Thesis: Refinement-based reasoning of P2P protocols is feasible and useful
- Additional Contributions: Automated homework feedback and checking systems, proof verification frameworks, string equation solvers

M.Tech in Computer Science — IIT Kanpur — Kanpur, India — 2015-2017
B.Tech in Electrical Engineering — IIT (BHU) Varanasi — Varanasi, India — 2006-2010

PUBLICATIONS

1. A Formalization of the Correctness of the Floodsub Protocol - ACL2 Workshop 2025 - Best Student Paper Award
2. A Formalization of the Correctness of the Floodsub Protocol - arXiv preprint arXiv:2507.19013, 2025
3. Formal Model-Driven Analysis of Resilience of GossipSub to Attacks from Misbehaving Peers - IEEE Symposium on Security and Privacy 2024
4. Verification of GossipSub in ACL2s - ACL2 Workshop 2023 - Best Student Paper Award
5. Automated Grading of Automata with ACL2s - Electronic Proceedings in Theoretical Computer Science 2023
6. Proving Calculational Proofs Correct - ACL2 Workshop 2023
7. Calculational Proofs in ACL2s - arXiv preprint 2023
8. Mathematical Programming Modulo Strings - Formal Methods in Computer Aided Design 2021

AWARDS AND HONORS

Best Student Paper Award, ACL2 Workshop 2025
Dissertation Completion Fellowship, Summer 2024
Invited Talk, Syracuse University 2024
Best Student Paper Award, ACL2 Workshop 2023
Invited Talk, IPFS Camp Lisbon 2022
Student Travel Fellowship, PLMW at POPL 2019
First Prize, Droidcon India Hackathon 2013