

Avjot Singh

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EDUCATION

Stony Brook University

Master of Science in Computer Science | GPA: 3.8

Relevant Coursework: Distributed Systems, System Security, Computer Architecture

Stony Brook, New York

Expected Graduation: May 2026

Birla Institute of Technology and Science

Master of Science in Information Systems (Work-Integrated) | GPA: 8.4

Relevant Coursework: Data Structures and Algorithms, Operating Systems, Database Systems, Computer Networks, Artificial Intelligence, Systems Programming, Object Oriented Programming, Software Engineering

Pilani, India

Jan 2022 – Jul 2024

Delhi Technological University

Bachelor of Technology in Electronics and Communication Engineering | GPA: 8.2

Relevant Coursework: Computer Vision, Computer Architecture, Mathematics I/II

Delhi, India

Aug 2014 – May 2018

TECHNICAL SKILLS

Languages: 5 years - Python, SQL; 2 years – C++, Java, TypeScript; 1 year – C, C#, HTML, CSS; 6 months - JavaScript

Frameworks: 4 years – Tensorflow, Keras, pandas, sklearn, numpy; 3 years – Flask; 1 year – Node.js, Hadoop, Spark, Datadog, .NET Core; 6 months – React.js

Databases: 4 years – MySQL, Amazon Redshift, Memcached; 1 year – Redis, SQLite; 3 months - DynamoDB

Operating Systems: 4 years – Windows, Linux (Ubuntu), MacOS

Cloud infrastructure: 3 years - Amazon Web Services (S3, Glue, IAM, SQS, SNS, EC2, ECS, Lambda, CloudWatch, EventBridge, ElastiCache, EMR, RDS, Kinesis, Step Functions, Redshift data warehouse)

Certifications: Machine Learning and Data Science (Plaksha Tech Leaders Fellowship, Jul 2021), OAuth 2.0 and OIDC (Udemy, Nov 2023), System Design (Educative, Aug 2023), Web Design (FreeCodeCamp, Aug 2023), Kafka Series – Intro/Connect/Streams (Udemy, Jun 2023)

PROFESSIONAL EXPERIENCE

Cisco Systems

Software Engineer III

Bengaluru, India

Aug 2021 – Aug 2024

- Architected a notification system to handle the lifecycle of bell notifications – creation, aggregation, dismissal, and serving.
- Developed a real-time pipeline using AWS Step Functions to monitor ELT's health and performance, reducing MTTI by more than 60%.
- Achieved a 40% reduction in pipeline monitoring costs by migrating metrics/dashboards from CloudWatch to Datadog.
- Improved network availability insights for >95% customers (300k+ WAN interfaces) by implementing a new algorithm in TypeScript.
- Rearchitected batch ETL jobs to handle stream processing and 50x production load, improving data recency from 1 hr to 5m
- Built a scalable data governance framework using S3 Access Points, enabling shared access to 5M+ overlays' data.
- Automated onboarding to path recommendations feature, reducing time from 2 days to <1 min, enabling 2k+ onboardings.

Cisco Systems

Software Engineer Intern

Bengaluru, India

Apr 2021 – Jun 2021

- Led a team of 2 to build an MVP of automated log analysis tool for anomaly detection by training an LLM on 10M+ logs.

Cleartax

Software Engineer

Bengaluru, India

May 2018 – Sep 2019

- Led a team of 2 to develop a microservice for parsing capital gains statement; reduced avg. tax filing time by >15%.
- Architected a real-time update pipeline for tax engine, enabling earliest adoption of Union Budget; attracted 2M+ users.
- Designed a framework to dynamically enable/disable tax filings, improving coding & deployment efficiency by 90%.

Indraprastha Institute of Information Technology

Undergraduate Research Intern

Delhi, India

Jun 2017 – Jul 2017

- Improved the performance of a driverless car's lane detection and tracking system by ~30% by experimenting with different techniques like Hough transform, Mahalanobis distance function, Kalman filtering etc.
- Created a new dataset for training and testing the system by recording, cleansing, and labelling dashcam videos.

ACADEMIC PROJECTS

Stony Brook University: CSE 535 Distributed Systems course projects

Stony Brook, New York

Paxos Implementation / Team size: 1

Sep 2024 – Oct 2024

Technologies/Skills: C++, CMake, protobuf, gRPC, SQLite, async programming

- Wrote a variant of Paxos consensus protocol for a distributed banking application to ensure consistent transaction logging across multiple servers. Each server handles and logs outgoing transactions for a specific client locally and initiates consensus among all servers to retrieve the latest transactions if the account lacks sufficient balance.

PBFT Implementation / Team size: 1

Oct 2024 – Nov 2024

Technologies/Skills: C++, CMake, protobuf, gRPC, SQLite, async programming, cryptography, ECDSA, MAC signatures

- Implemented normal case operation, view change routine, and checkpointing mechanism of linear-PBFT to deploy a simple banking application wherein clients send transactions to a cluster having some malicious servers. Optimizations include optimistic phase reduction.

Distributed Transactions Processing (2PC + Paxos) / Team size: 1

Nov 2024

Technologies/Skills: C++, CMake, protobuf, gRPC, SQLite, async programming, LevelDB

- Implemented 2-Phase Commit (2PC) protocol on top of simplified Paxos to process distributed transactions within a shared cluster. Introduced locking and write-ahead logging (WAL) at servers to prevent concurrent transaction execution and to record transaction metadata before preparing for, committing, or aborting a transaction.

Stony Brook University: CSE 502 Computer Architecture course project

Stony Brook, New York

5-stage RISCv pipeline with Direct-Mapped Caching / Team size: 2

Oct 2024 - Dec 2024

Technologies/Skills: SystemVerilog, VaporView

- Designed and wrote a 5-stage pipelined RISCv processor supporting RV64-IM ISA along with direct-mapping caching. Added support for data forwarding, hazard detection, and branch prediction in the pipeline.

INDEPENDENT PROJECTS

Kafka GitHub source connector

Dec 2023

Technologies: Java, Kafka Connect, Kafka, Maven

- Implemented a Kafka source connector to stream the list of pending Github issues from the connector's configured repository and display those issues on a console.

Food Ordering App

Aug 2023 – Sep 2023

Technologies: JavaScript, React.js, HTML, CSS, Firebase

- Developed a simple food ordering frontend app that lets a user browse food menu, add or remove food items to a cart, and view cart summary along with the total order amount.

Hindi WALs chatbot

Jan 2021 – Feb 2021

Technologies: Python, RASA, WALs, Natural Language Processing

- Built a Slack chatbot capable of conversing in Hindi and answering questions related to languages - languages spoken in a country, genders in a language, ancestral tree of language, etc.

PROFESSIONAL AWARDS

- **Getting to the Finish Line:** For leading observability dashboards initiative to detect performance bottlenecks in the ELT pipeline (Cisco, Oct 2023)
- **Living Cisco's Principles:** For cross team collaboration, quick ideation, and delivery at Cisco EN hackathon (Oct 2022)
- **Innovate Everywhere:** For designing and implementing a real-time system to compute SDWAN's data plane availability from SDWAN telemetry data (Cisco, April 2022)