Bhuvan Singla

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EDUCATION

INDIAN INSTITUTE OF TECHNOLOGY KANPUR   2018 - 2022 (EXPECTED)
Major in **Mathematics and Scientific Computing** - CPI: 8.4/10.0
Minor in **Computer Systems** (Retrospective)

LAL BAHADUR SHASTRI SCHOOL, NEW DELHI   2016 - 2018
CBSE Grade 12 - **Score: 94.2%**

ST. JOSEPH'S CONVENT SEN SEC SCHOOL, BATHINDA   2004 - 2016
CBSE Grade 10 - **CGPA: 10.0/10.0**

EXPERIENCE

JPMORGAN CHASE & CO. | BENGALURU, INDIA | SOFTWARE ENGINEERING INTERN   MAY 2021 - JULY 2021
> Worked with the Commercial Loan Portal (CLP) team, which enables external clients to perform loan related transactions.
> Developed an internal-use dashboard, as a one-stop solution to **monitor all the transactions and bug issues** of CLP.
> Deployed the application to **private-cloud** using industry standard **devops** principles with support for CI/CD.
> Offered a **pre-placement offer** to join full-time after graduation.

React | SpringBoot | Javascript | Java | Oracle DB | Jenkins | IDAnywhere | Private Cloud | REST APIs | Jira

IBM SOFTWARE LABS | BENGALURU, INDIA | SOFTWARE ENGINEERING INTERN, AREA 631   JAN 2021 - APR 2021
> **Optimized** workload management and scheduling algorithm in **Apache Spark** using an RL-based approach.
> Achieved an overall **27% performance improvement** compared to the baseline run.
> Added support for **new scheduling mode** (SJF), **automatic classification of DAGs** based on complexity, dynamic switching of scheduling modes, weights, and other tune-able parameters.
> Exposed tune-able handles in Spark to **integrate** a reinforcement learning agent.
> Executed on an **eight-node** vm cluster and wrote shell scripts to automate the environment setup.

Scala | Apache Spark | RL | Shell Scripting | Linux | Multi-node clusters | Python

MIT MEDIA LAB | MASSACHUSETTS INSTITUTE OF TECHNOLOGY, USA | SOFTWARE ENGINEERING INTERN   DEC 2019 - SEP 2020
> Developed **multiple features** for Scratch, a block-based programming language used by over **72 million users.**
> Extended the platform to **support real-time peer-to-peer** collaboration, execution of projects and **signaling blocks** to communicate actions/messages across projects via **WebRTC and WebSockets.**
> Developed *Let's Chance*, an **extension for probabilistic programming**; added code blocks to support **Markov modeling.**

WebRTC | WebSockets | P2P | Scratch | React | Blockly | Firebase | Node.js | Express.js

GOLDCAST | BOSTON, USA | SOFTWARE ENGINEERING INTERN   APR 2020 - AUG 2020
> One of the **first engineers** of Goldcast; Worked in a **distributed** setup with the team spread across **3+ timezones.**
> Built a platform to conduct live virtual corporate events with measurable return-on-investment.
> Developed the complete **video infrastructure** of the platform with various **features** such as broadcast, peer-to-peer video chat, screensharing - **scalable to 100K concurrent users.**
> Earlier, built the **MVP** which helped the firm get early traction, **3 paid clients and subsequent venture capital backing.**

Vue.js | GraphQL APIs | AWS | Amplify | Node.js | Express.js | Agora | Bubble | Flask | Video Infrastructure | CI/CD

SIEMENS | GURGAON, INDIA | SOFTWARE ENGINEERING INTERN   MAY 2019 - JULY 2019
> Developed a **blockchain-backed supply-chain management** system to manage internal purchase orders.
> Implemented **multiple features** including stakeholder manager, supply workflow, audit trail generator, order search, notifications, authentication system, data dump handler and mail service.
> **Awarded** runner-up for the 10th Aegis Graham Bell Awards.

Angular | PostgreSQL | Spring Boot | Java | Blockchain | Hyperledger Fabric | Hyperledger Composer | REST APIs

PROJECTS

IITK COIN | PROGRAMMING CLUB, IIT KANPUR   BHUVANSINGLA/IITK-COIN
> Developed the backend for a centralized **pseudo-currency system** in **Go.**
> Built robust REST APIs that can handle **concurrent** transactions and **multi-level user permissions.**
> Leading a **team of 6** to develop the **React Native** app. Soon to be deployed to production for use inside IITK campus.

Go | REST APIs | React Native | SQLite | JWT | Figma | Postman | Docker | CI/CD

AeroDrome in RoadRunner | Prof. Swarnendu Biswas | CS636 Course Project ⌂ BHUVANSINGLA/AERODROME-ROADRUNNER
- › Implemented the AeroDrome algorithm, to check **atomicity of programs dynamically in linear time** using vector clocks, in the RoadRunner dynamic analysis framework.
- › Tested for **correctness** and performance on micro and macro **benchmarks**.

Atomicity Checking | Concurrency Bugs | Vector Clocks | RoadRunner | AeroDrome | Analysis of Concurrent Programs

COVID-19 Contact Tracing | Prof. Swaprava Nath | Dept. of Computer Science and Engineering, IIT Kanpur
- › Set up a **graph database** with Neo4j to store contact tracing data collected by various location signals
- › Wrote **shell scripts** to pre-process the data and stored in the database via a Python driver.
- › Performed **queries** via CQL to assess the risk of nodes and **presented visuals** for medical representatives.

COVID-19 | Contact Tracing | Graph Databasing | Neo4j | Bash Scripting | Python | Cypher Query Language

Technical Skills

Programming	C/C++, Python, GoLang, Java, Scala, Bash and Shell Scripting
Web	JavaScript, Node.js, GraphQL, React, Angular, Vue.js, Firebase, WebRTC, WebSockets
Utilities	Git, Travis CI, Jira, Docker, Heroku, LaTeX, Vim, Neo4j, Linux shell utilities.

Honors and Awards

2018-21	**Inspire Scholarship Awardee**, Govt. of India
2018	**All India Rank 706**, JEE Advanced
2018	**All India Rank 1303**, JEE Mains
2018	**KVPY Scholarship Awardee**, Govt. of India
2018	**National Top 1%**, NSE Chemistry
2018	**National Top 1%**, NSE Physics
2018	**National Top 1%**, NSE Astronomy
2016	**NTSE Scholarship Awardee**, Govt. of India
2015	**State Top 1%**, NSE Junior Science

$i-upcoming$

Relevant Coursework

Data Structure and Algorithm	Fundamentals of Computing	Software Development and Operations [i]
Concurrent Program Analysis	Probability And Statistics	Peer To Peer Networks [i]
Computer Organization	Computational Cognitive Science	Time Series Analysis
Linear Algebra	Scientific Computing	Malware Analysis & Intrusion Detection [i]

Positions of Responsibility

Coordinator | Stamatics, Dept. of Mathematics and Statistics, IIT Kanpur   July 2020 - July 2021
- › Headed the student body of mathematics department and **led a team of 10 sophomores**.
- › Conducted events and lectures year-long, on a wide range of topics from mathematics with nation-wide reach.

Executive, Web | Students' Gymkhana, IIT Kanpur   Sep 2018 - May 2021
- › Maintained the student body's servers and VMs, **planned new infrastructure and platforms** for the student community.

Executive, Web | Vox Populi, IIT Kanpur   Apr 2020 - Sep 2021
- › Upgraded the **backend infrastructure** and **revamped the UI/UX** of the journalism body of IIT Kanpur.

Executive, Web | GnS Council, IIT Kanpur   Apr 2019 - Mar 2020
- › Revamped the council's website by shifting from PHP-based web pages to a **Hugo** (static site generator) built website.
- › **Automated** and simplified the process of making amendments to the content by following a **CMS-based approach**.

Academic Mentor | ESC101 - Fundamentals of Computing | CS, IIT Kanpur   Apr 2019 - Mar 2020
- › Helped the students to cope with the academic system of the institute **both emotionally and academically**.
- › Achieved by conducting **remedial classes and one to one mentoring** students.

Secretary | Programming Club, IIT Kanpur   Mar 2019 - Feb 2020
- › Hosted institute-wide **lectures** on various programming topics, organized **hackathons** and offered projects.
- › Contributed to open-source projects, used by campus community of approx **6,000 people**.

Miscellaneous

- › Managed IITK's **student servers and VMs**, that host student websites/apps, right from my **freshman year**.
- › **Mentored 40+ freshman and sophomores** to build a backend application in **Go** and taught the basics of **DevOps**.
- › Prof. Purushottam Kar offered **Advanced Track** of the course Fundamentals of Computing, due to excellent performance.
- › Among the 25 people accepted to the **European Summer Program on Rationality** held in the **United Kingdom**.
- › Attended the Programming Club, IITK's annual **Winter Camp** in freshman year.
- › Contributed to the **Guinness World Record** of planting the maximum no. of trees in one hour.
- › Maintain a personal webpage and blog at **bhuvansingla.com**.