

Shrey Tripathi

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[LinkedIn](#) | [Github](#) | [Portfolio](#)

Objective

Final year grad student at IIITB. My interests lie in the fields of Distributed Systems, Software Engineering, and Graph Theory.

Education

International Institute of Information Technology (IIIT) Bangalore <i>Integrated Masters in Technology, Computer Science and Engineering</i>	Aug 2019 – July 2024 CGPA 3.18/4.00
Airport School, Ahmedabad <i>Senior School (Class XII)</i>	April 2017 – May 2019 Aggregate 90.8%
Airport School, Ahmedabad <i>Secondary School (Class X)</i>	April 2015 – May 2017 CGPA 10.00/10.00

Publications

- Sharma, E., Chakrabarti, S., [et al, including **Tripathi, S.**] (2022) Automated Application Processing. *Sadhana* **47**, 244 (*Indian Academy of Sciences*). Software Engineering Lab, International Institute of Information Technology Bangalore. doi.org/10.1007/s12046-022-02022-x

Work Experience

EDG Intern May 2023 – July 2023
MathWorks

- As an intern in the Engineering and Development Group (EDG), worked on re-designing the report generated by the Simulink Model Advisor, which identifies inaccurate or inefficient modeling conditions and configuration settings to improve simulation accuracy and efficiency.
- Used JavaScript to make the report visually appealing and interactive, and used object-oriented programming techniques to create a Reporter class using the MATLAB Report Generator, that defines the DOCX, PDF, and HTML reports.

Tezos India Fellow Aug 2021 – Oct 2021
Tezos India

- Developed the beta version of a decentralized cryptocurrency safekeeping application on top of the Tezos blockchain, that enables safe and transparent transfer of digital assets to predefined accounts in unprecedented scenarios of loss of private keys or user demise
- Successfully built the frontend of the application using React, and integrated various end-points of the Smartpy backend with the frontend using the Taquito.js javascript library

Software Developer Jan 2021 – May 2021
Web Science Lab, IIIT Bangalore

- Built the first version of a Capacity Based Access Control (CBAC) portal for the Indian Urban Data Exchange (IUDX) framework, under the supervision of Professor Srinath Srinivasa.
- Successfully developed the basic functionalities from scratch: user authentication, world initialization, role selection, role modeling, and role(privilege)-based data access.

Research Experience

Accelerating Sparse Deep Neural Networks using GPUs May 2022 – Aug 2022
NSM Nodal Center, IIT Madras
Supervisor: Dr. Vishwesh Jatala

- Worked on accelerating sparse Deep Neural Networks (DNNs) using multiple thread programming for GPUs using CUDA.
- Developed the initial stages of the algorithm, involving multiple GPU cores to parallelize the inference process.
- Explored pipeline parallelism along with CUDA streams for efficient distribution of sub-parts of the inference process. Also explored warp shuffling and warp voting for optimization, and memory pooling to reduce memory fragmentation.

- We developed an automated process for the processing of applications for recruitment in large organizations, involving two main aspects: panel creation and interview scheduling
- My work involved studying and applying different graph coloring heuristics, including the Chaitin's Algorithm, Ant Colony Optimization, the Genetic Algorithm, Particle Swarm Optimization, etc. to schedule review/interview panels, to optimize the number of slots and schedule quality of different panels.

Projects

Swasthya Suraksha: A streamlined ABDM framework | *React, Spring* | [Report, Links](#) Jan 2023 — May 2023

- Swasthya Suraksha is a framework that acts as a trusted intermediary for seamless exchange of medical records of a patient given their consent, among different hospitals, without storing the health records.
- Contributed in creating the EHR format for health records across establishments, and in sharing the filtered EHR data on consent verification.
- Implemented EHR data sharing through a *dataPostUrl*, whenever a pre-consented establishment requests for the data of a specified patient.

Just-post-it | *Django, Javascript, AJAX, PostgreSQL* | [GitHub](#) Aug 2020 – Sep 2020

- Developed a full-stack web-based Twitter-like social networking application.
- Created a Rest API in Django, while connecting it to a PostgreSQL database.
- Used AJAX to implement a single-page application for the front-end that lets users like/unlike posts and edit their own posts in real-time without a page reload.

Decalypse | *React, Solidity, IPFS, Ethereum* | [Project](#) July 2021 – Aug 2021

- A decentralized NFT marketplace which lets users create their own NFTs and put them up in a marketplace. Functionalities include buying, selling, auctioning, and putting NFTs up for charity
- Contributed to the smart contract that stores NFT objects as structures, mints NFTs on IPFS, and emits events for creation of new NFTs, sale of NFTs and transfer of NFTs from one account to another

CryptoWill | *React, SmartPy, TypeScript* | [Project](#) Aug 2021 – Oct 2021

- CryptoWill lets users store their cryptocurrencies in a decentralized "will", so as to prevent their holdings from becoming dormant in case of loss of private keys or user demise
- Contributed to the front-end of the application by developing the React app with Typescript, and then integrating it with the SmartPy endpoints and contract storage with the Taquito.js Javascript library

AskReddit Troll Question Detection | *Python, SkLearn, NLP* | [GitHub](#) Oct 2021 – Dec 2021

- Used Machine Learning algorithms to produce a model capable of automatically detecting troll questions on AskReddit, one of the most popular subreddits where users ask and answer thought-provoking questions, so that they can be flagged and removed
- Different pre-processing techniques included feature extraction using the bag-of-words model and word embedding using Word2Vec to form context-based vectors, along with stop-words removal, conversion to lower case, punctuation and numerical content removal, lemmatization and stemming, etc.
- Optimized various classification models through hyperparameter tuning to achieve an F1-score of 0.54 for the troll questions with an overall model accuracy of 0.95

Teaching Experience

Teaching Assistant Aug 2022 – Dec 2022

Course: CS303 Software Engineering

Instructor: Dr. Sujit Kumar Chakrabarti

Teaching Assistant Nov 2021 – Mar 2022

Course: ESS112 Programming - 1 (Python)

Instructor: Dr. Milind Gandhe

Relevant Coursework

Computer Science: Programming(C/C++/Python/Java), Software Engineering, Data Structures and Algorithms, Operating Systems, Design and Analysis of Algorithms, Cloud Computing, Programming Languages, Database Systems, Computer Architecture, Theory of Computation, Computer Networks, Digital Design, Signals and Systems, Software Testing, Software Architecture

Data Science: Machine Learning, Visual Recognition, Mathematics for Machine Learning, Linear Algebra, Probability and Statistics

Mathematics and Basic Sciences: Calculus, Discrete Mathematics, Computational Chemistry, Physics

Social Sciences: Economics, Digital Sociology, The Web and the Mind, Technology and Society, History of Ideas, Technical Communication

Technical Skills

Languages: Python, Java, C/C++, HTML/CSS, JavaScript, SQL (MySQL)

Frameworks: Django, Flask, Kubernetes, Docker, Jupyter, SASS, Markdown, Bootstrap, LaTeX, Jekyll, JDBC, Servlets

Developer Tools: Git, GitHub, GitHub Actions, VS Code, Figma, Heroku, Docker, Vim

Awards and Honors

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| 2022 | Smart India Hackathon Winner, Ministry of Education, Government of India
GATE 2022 Qualified, Ministry of Education, Government of India |
| 2021 | LiFT Scholarship, The Linux Foundation
Tezos India Fellowship, Tezos India |
| 2020 | Academic Excellence Award (Academic years 2017-18 and 2018-19), Airport School, Ahmedabad |
| 2019 | Student of the Year (Academic year 2017-18), Airport School, Ahmedabad |
| 2017 | NTSE Scholarship, National Council of Educational Research and Training (NCERT) |

Presentations/Talks given

1. "Capacity Based Access Control and the Multiverse Framework"
Web Science Lab, IIT Bangalore, 27th April, 2021
[Slides](#)

Clubs and Extracurricular Activities

- **Google Developer Student Club (GDSC) - IIT Bangalore:** Lead of the GDSC, where we use Google's technologies to spread awareness about open-source in our institute and improve the culture through a community that tries to solve real-world problems that people may face in their day-to-day lives
- **Zense:** Member of the Software Development Club, where I work on and coordinate on various projects undertaken by the club to solve real-world problems
- **Enigma:** Member of the Robotics Club, where I made an autonomous line-follower and an autonomous edge-avoiding robot using the Arduino microcontroller, and am currently studying drone simulations in MATLAB-Simulink
- **Parvaaz:** Team Lead of the Dramatics and Theater Arts Club. Our group act ended up 2nd at Pravega 2020, organized by IISc Bangalore
- **8Bit:** Member of the editorial team of the official magazine of IITB
- **Yamini:** Anchored Yamini 2019, the annual dusk-to-dawn traditional music/dance confluence organized by SPICMACAY, IIT Bangalore chapter