

SARANSH CHOPRA

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EDUCATION

Cluster Innovation Centre, University of Delhi

New Delhi, India

B.Tech. Information Technology and Mathematical Innovations | Computational Biology | CGPA: - 9.31

2020 – 2024

EXPERIENCE

Cluster Innovation Centre, University of Delhi

New Delhi, India

Student researcher

November 2021 – present

- Working under Dr. Shobha Bagai to approximate the solutions of partial differential equations using Physics-Informed Neural Networks, Neural Tangent Kernels, and Spatio-temporal Multi-scale Fourier Feature Networks

AiView

New Delhi, India

Research and Development intern

September 2021 – November 2021

- Developed an end-to-end python OCR library with a CI/CD pipeline and deployed it using FastAPI and Heroku.
- Collected a dataset of human images and their distance from the camera by building a stereovision camera.

Google Summer of Code

Remote

Open-Source Developer at PyBaMM, NumFOCUS

May 2021 – August 2021

- Built an automated Twitter Bot capable of tweeting random Battery Simulations, and replying to requested simulations.
- Developed a CI/CD pipeline using GitHub Actions and Heroku, and followed a micro-services based architecture.

PROJECTS

SceneNet [Transfer Learning, VGG19, CNNs, Python, Flutter, Dart, FastAPI, Heroku]

December 2021

- Trained a CNN on 10,000+ images using transfer learning (VGG19) to classify sceneries into 67 categories.
- Developed a standalone API for the model, and a Flutter application for the users.
- Achieved a maximum accuracy of 96% on the test set and 64% on the cross-validation set.

PopItUp [Android, Kotlin, Firebase, Firestore, Google Sceneform SDK, Google ARCore SDK]

May – August 2021

- An Augmented Reality shooting game developed in native android by manually adding and editing the Sceneform SDK.
- Used the FirestoreRecyclerView to load live data into the leaderboard.

MemeTastic [Flutter, Dart, NodeJS, Elasticsearch, Kibana, CI/CD, Google Cloud, Reddit API]

May 2021

- The backend, deployed on GitHub Actions, ingests the latest meme data into Google Cloud hosted Elasticsearch.
- The frontend, with a clean UI, pulls the data and provides a feature to search any meme using the ngram analyser.

ChaoticEncryption [Python, ODEs, Encryption-Decryption, Pseudo-Random Number Generator, Matplotlib]

March 2021

- An Encryption-Decryption script that uses Logistic map and Lorenz System of Differential Equations as PRNGs.
- Along with encrypting images, it also aims to connect chaos, encryption and fractals together.

RELEVANT SKILLS AND COURSEWORK

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| Coursework: | Data Structures Algorithms PDEs ODEs Discrete Mathematics Linear Algebra DBMS |
| Languages: | Python C/C++ Javascript Java Dart Kotlin |
| Frameworks/Libraries: | Flutter ReactJS ExpressJS NodeJS React-Native Tensorflow FastAPI DeepXDE |
| Platforms and Tools | Linux Heroku Google Cloud Elasticsearch Kibana MongoDB Firebase Docker CI/CD |
| Research: | ANNs CNNs RNNs PINNs NTK SVMs and kernels Optimizations |

OPEN SOURCE

pybamm-team/PyBaMM | pybamm-team/BattBot | pybamm-team/liionpack | colour-science/colour | lululxvi/deepxde

PUBLICATIONS

T. G. Tranter, R. Timms, V. Sulzer, F. Brosa Planella, G. M. Wiggins, P. Agarwal, **S. Chopra**, S. Allu, P. Shearing, D. J. L. Brett. *liionpack: A Python package for simulating packs of batteries with PyBaMM*. Draft.

AWARDS AND ACHIEVEMENTS

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| Hackathons: | Winner of the Elastic hackathon (out of 2500+ registrations). |
| Asteroid Discovery: | Discovered an asteroid having a fixed orbit around Sun by analysing the data of Pan-STARRS. |
| Award: | Faraday Institute's Collaboration Award - awarded to the PyBaMM contributing community. |
| Talks: | The Faraday Institute, UK - Presented BattBot in front of researchers from around the world. IIT Madras - Organised and delivered talks on Python in research and, Git and GitHub. |