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: - 9.15   *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.

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 - Drive, GitHub.

OPEN SOURCE

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

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

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
Platforms and Tools	Linux	Heroku	Google Cloud	Elasticsearch	Kibana	MongoDB	Firebase	Docker	CI/CD
Research:	ANNs	CNNs	PINNs	NTK	SVMs and kernels

Awards and Achievements

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.
Presentations and talks:	**PyBaMM workshop**: Presented BattBot, held in collaboration with the Faraday Institution. **IIT Madras** : Invited to deliver talks on Python in research and, Git and GitHub.

Languages

Hindi (mother tongue), English (fluent), German (basic), Punjabi (conversational)

Voluntary services

Mentored 10+ college students through CodePeak and Script Winter of Code.