SASHANK MISHRA

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ACADEMIC QUALIFICATIONS

Year	Degree/Board	Institute	CGPA/%
2016 - Present	B.Tech. - Information Technology	IIIT Allahabad	8.58/10.00
2015	ISC	Guru Har Rai Academy, Kanpur	96%
2013	ICSE	Guru Har Rai Academy, Kanpur	93.33%

SCHOLASTIC ACHIEVEMENTS

- Secured **AIR 7942** in JEE - Mains Entrance Examination 2016.
- Among the **Top 1%** of students in city in the ISC 12th Examination.
- Among the **50 students** to be selected to attend Computer Architecture Summer School (CASS-18), held at **IIT Kanpur**
- One of the **23 students** selected for Vacation Students Program (VSP) of Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, to attend the introductory lectures on Astronomy and Astrophysics.

PROJECTS

Machine Learning-based Optical Fine Alignment tool

R&D Project under Dr. Sreejth Padinhatteri, Inter-University Centre for Astronomy and Astrophysics *May 2019 – Present*

- Technology Stack – Zemax OpticStudio, ZOS-API, Python: Numpy, Scipy, Keras, Tensorflow
- The project aims to model the distortions in the PSF matrices due to the misalignment of the optical components of the telescope, and then apply various Machine Learning algorithms to accurately predict the exact component having the misalignment.
- The project consists of two components: Generation of Dataset and Application of various Machine Learning algorithms.
- The datasets consist of various Spot Diagrams, at all possible perturbations under the optical and mechanical tolerances defined previously, created using ZOS-API for Python.
- The optical diagram of the system has been previously created using the Zemax OpticStudio, and used as a base to generate various perturbations using the API.
- The dataset created, would then be fed on to a Machine Learning algorithm, which is yet to be analyzed.
- This tool is proposed to be used in the **Solar Ultraviolet Imaging Telescope (SUIT)**, one of the payloads of the Aditya-L1 mission of **Indian Space Research Organization (ISRO)**

Spectral Analysis and Forecasting on Astronomical Time Series

6th Semester Mini Project under Prof. Pavan Chakraborty, IIIT Allahabad *January 2019 – May 2019*

- Technology Stack – Python: Numpy, Scipy, Astropy, astroML, Tkinter
- The project employs the use of various Periodogram-based techniques like Fourier Transform, Lomb - Scargle Method, to estimate the Power Spectral Density at various frequencies.
- The accurate forecasting of the data was done by estimating the various parameters of an ARIMA model, by the analysis of the Auto-Correlation Function (ACF) and the Partial Auto-Correlation Function (PACF) of the data.
- The above-mentioned methods were employed on both evenly-sampled data (LIGO) as well as unevenly-sampled data (LINEAR)

Text to Image Generation using Generative Networks

5th Semester Mini Project under Prof. GC Nandi, IIIT Allahabad *August 2018 – November 2018*

- Technology Stack – Python: TensorFlow, Tensorlayer, Numpy, Scipy
- The project employs the use of Generative Adversarial Networks (GAN) to convert an input text into corresponding images.
- The model was trained on VGG Flowers and UCSD Birds dataset. Also, every image has 10 captions each, relating to corresponding image in the dataset.
- The text was converted into feature vectors using LSTM Embeddings. They were concatenated with images and were feed on to the network.
- The model used Adam Optimizer to optimize the cost function of the Generative Network.

LastMile

Project at Hack36 '19 *January 2019 –January 2019*

- Technology Stack – Django, Solidity, Metamask, Javascript
- The project aims to automate the process of the compensation provided to the passengers when flights are delayed/canceled, by levaraging the power of smart contracts.
- As soon as the tracking system sends the details of the flights cancelled, the contract gets triggered and issues the meal, hotel or taxi vouchers to all the passengers of that flight.
- The Airlines can use the developed API to drive the passenger experience.

SecTra

Project at Prototype '18 *October 2018 – October 2018*

- Technology Stack – Django, Kotlin, TensorFlow, AWS
- The project employs the use of Object Detection to identify the items not allowed in flight travels. It also differentiates between the items allowed in carry bag or check-in bag.
- The airport security can use the software in assisting them to identify vulnerable items, which generally is a manual process.
- Also, the project has an Android Application which assists the user in sorting his items into different bags based on the fight (Domestic/ International).
- The project received 5th position at the Hackathon.

Aparoksha'18 Campus Ambassador Android Application *December 2017 - February 2018*

- Technology Stack – Kotlin, Firebase (Realtime Database, Storage, Authentication, Functions, Analytics, Messaging), REST APIs
- The app is centered for a particular user, providing various features.
- User can upload images for particular tasks, and points are credited appropriately.
- A leaderboard is maintained to view top 10 users (with maximum points).
- On reaching particular levels, scratch cards are awarded, which fetches more points.
- The app is available on Google Play Store, with over 1000 downloads, all over the country.

Aparoksha'18 Official Android Application *February 2018 – March 2018*

- Technology Stack – Kotlin, Firebase (Realtime Database, Authentication, Analytics, Messaging), REST APIs, WaspDB
- Used many open source libraries such as Retrofit, Moshi and Glide.
- Fetches events info and latest updates, and presents to the users.
- Employs usage of Android Architecture Components and Kotlin Coroutines.
- Provides user with a QR code upon sign in, which is used then to register for the event.
- App had around 500 downloads, and is available on Play Store.

Caviar

Project created for Database Management course *March 2018 - April 2018*

- Technology Stack – Django, PostgreSQL.
- A web - based restaurant management system, which has User, Admin, and Staff interface.
- User can select various food items, manage quantities and place the order for delivery.
- Admin can view all orders of different customers, confirm the order and assign a delivery boy for the delivery boy for the item.
- Staff (Delivery Boy) can view all the orders assigned for delivery, and update admin on completion.
- Currently deployed on Heroku.

Applet Communication

Project created for Object Oriented Methodology course *October 2017 – November 2017*

- Technology Stack – Java (AWT, Swing)
- The project demonstrated communication between two applets.
- An applet displays an animation, whose parameters are controlled via second applet.
- The project is implemented in two instances – Core AWT and AWT + Swing (Java GUI Frameworks).

TECHNICAL SKILLS

- **Programming Languages –** Java, Python, MATLAB, C, Kotlin, C++
- **Tools & Technologies –** Keras, Scikit-learn , TensorFlow, Matplotlib, Numpy, Scipy, Android Studio, Firebase, Netbeans, Git, Django, Eclipse, MySQL, PostgreSQL, Visual Studio Code, REST APIs
- **Operating Systems** – Windows (7,8,10), Linux (Ubuntu, Android).

EXTRA-CURRICULARS

- **Head, Technical Department**, Pragma ‘19 - Developer and Design Conference
- **Coordinator, App Development Wing, GeekHaven** - The Technical Society of IIIT Allahabad
- **Organiser**, IIITA Hacks ‘17
- **USG Information Services**, IIITA MUN ‘17

RELEVANT COURSES

Mathematics – Linear Algebra, Probability & Statistics, Convex Optimization
Computer Science – Design and Analysis of Algorithms, Data Structures, Database Management Systems, Operating Systems, Computer Organization and Architecture, Artificial Intelligence, Computer Networks, Soft Computing, Image and Video Processing