Simardeep Singh Sethi

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Education

- **Guru Tegh Bahadur Institute of Technology(GGSIPU)** Delhi, India
  Bachelor of Technology - Computer Science ; GPA: 8.81 *July 2018 - July 2022*
  Courses: *Operating Systems, Data Structures, Analysis Of Algorithms, DBMS, Networking, Machine Learning and Heuristics*

Skills Summary

- **Languages**: Python, C, C++, JavaScript, SQL, Bash, HTML,CSS
- **Frameworks**: OpenVino,Scikit, PyTorch, TensorFlow, Keras, Dash
- **Tools**: GIT, MySQL, Jupyter Notebook, Colab
- **Libraries**: ONNX, Pandas, NumPy, Matplotlib, Plotly, Seaborn

Experience

- **Indian Institute of Technology(IIT)** Delhi
  Research Associate *July 2022 - Present*
  - **Project**: MAVI:Mobility Assistant for Visually Impaired
  - **Abstract**: A project aimed at providing mobility assistance for visually impaired individuals.
  - **Contribution**: Working on various text detection and recognition models for real-time application. Includes porting models to OpenVino IR format to be compatible with processing devices such as MYRIAD Intel NCS2.
- **Indian Institute of Technology(IIT)** Delhi
  Research Intern *April 2022 - July 2022*
  - **Project**: MAVI:Mobility Assistant for Visually Impaired
  - **Abstract**: A project aimed at providing mobility assistance for visually impaired individuals.
  - **Results**: Created inference pipelines to manage different OCR models. Managed Control Systems Software for the device. Contributed to an initial working prototype of the device.
- **Cloudnine** Remote
  Data Science Intern *April 2022 - June 2022*
  - **Project**: VAS Target Report, Automatic Grading of Embryology Images, Digital Dashboards
  - **Abstract**: Created novel dashboards giving insights into the Expected Revenue and Delivery Dates for the numerous branches of hospitals. Worked on a novel project on grading embryology images using novel vision architectures to assist in the process of IVF
- **Google Summer of Code - Effective Quadratures** Remote
  Student Developer *(Link)June 2021 - August 2021*
  - **Project**: Dashboard for Uncertainty Quantification
  - **Abstract**: The application would provide operations for uncertainty quantification and various plotting functions helping the user to gain insights from the model.
  - **Features**: Dashboard consists of 3 different models: Analytical, Offline and data-driven model, each with different modes of operations.
- **SARSTEM** Remote
  Summer Research Fellow *(Link)July 2021 - September 2021*
  - **Project Course**: Working in a team to research in computer science field
  - **Project Abstract**: Detecting accident prone vehicles on intersections using Long-Short Term Memory units and attention models
- **Mavoix Solutions Private Limited** Remote
  AI/ML Developer *(Link)September 2020 - November 2020*
  - **Project**: Created a deep learning model for fast and accurate readings from glucometer
  - **Project Abstract**: Collected and labelled data manually using software like LabellMg. Applied image pre-processing, various object detection models like YOLO, RCNN.
  - **Project Result**: Achieved an accuracy of 97% on the model. The model is integrated within the companies mobile application

Publications

- Donepudi Harshini S., Jansirani Preethaa,Saxena Mayank,Simardeep Singh Sethi,Yeo Xiong Yun,Barnali Gupta Banik**. A Comprehensive Study on Accident Detection Approaches** (2021): (Accepted at IEEE DELCON-2022)

Projects

- **VLT- Automatic Medical Report Generation of Chest X-Rays (NLP, Image processing, Computer Vision, Unsupervised Learning)**:
  - **Abstract**: Research on a scaled model to improve automatic medical report generation
  - **Current Methods**: Current methods involves use of Unsupervised Deep Learning methods such as Attention model and Bi-directional LSTM's
- **Image Mapping using SIFT and SURF feature detectors (Computer Vision)**:
  - **Abstract**: Working with SIFT(Scale-Invariant Feature Transform) and SURF(speeded up robust features)
  - **Description**: Image Mapping in augmented images using SIFT and SURF feature detectors
- **Collision-Prone trajectory prediction using social sensitivity features (Computer Vision, Machine Learning)**:
  - **Abstract**: Extrapolating safe and unsafe trajectories using Energy potential of a vehicle
  - **Description**: Used Bidirectional LSTM to find safe and unsafe trajectories to predict a collision. Made use of a vehicle's Energy potential calculated using social sensitivity features such as distance and peakiness of the weighing function
  - **Results**: Obtained the maximum recall of 0.84 while considering 8 neighbouring vehicles for the target
- **Open Sourcing(Statistics, Machine Learning)**:
  - **Contributed to**: Equadratures, Statsmodel, Scipy
  - **Contributions**: Added several plotting functions such as sobol indices for senstivity analysis, regularization path for polynomials, resolved bugs in the codebase. Working on adding new kernel for kernel density estimation. Adding rule of thumb bandwidth estimation methods.