Atul Balaji

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EDUCATION

Columbia University New York, NY
M.S. in Computer Science, Machine Learning Track Exp Dec 2022
- Relevant Courses: NLP, DL System Performance, Analysis of Algorithms, Databases

Indian Institute of Technology Madras Chennai, India
B.Tech. in Electrical Engineering Jul 2020
- Relevant Courses: Deep Learning, Data Structures & Algorithms, Data Analytics, Reinforcement Learning

TECHNICAL SKILLS

Languages	Python, C/C++, SQL, Matlab, HTML
Frameworks	TensorFlow, PyTorch, Pandas, OpenCV, Scikit-Learn, Flask
Other Tools:	Git, LaTeX, Docker, Excel, Google Cloud Platform, Microsoft Azure

PROFESSIONAL EXPERIENCE

Ola Cabs Bangalore, India
Research Engineer Jul 2020 – Jun 2021
- Developed and deployed a real time multiple object detection and tracking system using the SSD MobileNet and YOLOv4 detectors and the DeepSORT tracker, to track the motion of vehicles and pedestrians.
- Collaborated with multiple teams towards developing and testing a machine learning model for detecting harsh braking and harsh acceleration behavior on cars and two-wheelers, achieving over 93% F-1 score.

American Express Gurgaon, India
Data Analyst Intern May 2019 – Jul 2019
- Created a Gradient Boosted Decision Trees (GBDT) model to identify potential gamers and unprofitable users among prospective credit card customers, in order to prevent wastage of offers.
- Implemented feature engineering and feature selection on the model using tradeline data, and achieved 10% projected increase in returns, resulting from fewer offers being rolled out to gamers and unprofitable customers.

Detect Technologies Chennai, India
Computer Vision Intern May 2018 – Jul 2018
- Built an intelligent asset inspection model for fault identification on images using Faster R-CNN with ResNet50.
- Performed semantic segmentation using U-Net to capture individual solar panels from thermal images of solar fields, in order to inspect for faults and hotspots.

ACADEMIC PROJECTS

Image Captioning using LSTM (Course Assignment, Columbia) Nov 2021 - Dec 2021
- Trained an LSTM model with image encodings and implemented the Beam Search decoder to produce captions.

Music Database and Web Application (Course Project, Columbia) Oct 2021 - Dec 2021
- Designed and implemented a music database in PostgreSQL consisting of artists, songs, users, playlists and more.
- Built a web front end application for the database using Flask with functions to search songs, add playlists and so on.

Extreme Low Light Image Enhancement (Undergraduate Project, IIT-M) Jan 2020 - Jul 2020
- Developed a CNN-based pipeline called LLPackNet for fast and light-weight enhancement of low light images.
- Proposed an efficient approach for large factor down/upsampling of feature maps to improve inference speed by 5x while also limiting color artifacts and distortions and maintaining good restoration quality.
- Co-authored a research paper published in BMVC 2020 (https://arxiv.org/abs/2011.14133).

Reinforcement Learning for Robotics (Course Project, IIT-M) Feb 2019 - May 2019
- Designed a goal-based RL environment for robotic manipulation tasks such as Reach, Pick and Place on Jaco, a comprehensive multi-joint robotic arm framework.
- Implemented Hindsight Experience Replay along with DDPG for continuous control in the sparse reward setting.