# SHREEYASH PAWAR

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**Portfolio**: https://shreeyash.netlify.app/

**SUMMARY :** Experienced in development and productising applications, made using python and AI libraries on Linux/Embedded Linux/Windows platforms.

**EXPERIENCE :**

**Sravathi.ai, -** *Data Scientist R&D,* March'20 – Present
- Generative modelling using unsupervised deep learning methods like GAN,VAE's and encoder decoder based models for novel drug discovery for COVID. The contribution resulted in 2 patents filing.
- Complete ownership of end-to-end deep learning pipeline from data ingestion of sparse and noisy chemistry data to training neural architectures and to serving as containers using docker.
- Used HPC concepts in training 1M+ images and data points using tensorflow.
- Trained from scratch a custom architecture for molecular image into text representation on 800K+ data points, inspired from image captioning architecture.
- Setup AI training machine with ubuntu-server, configured the GitLab enterprise sever and workflow.

**Société Générale, -** *Software developer,* July'19 – March'20
- Exposure to professional development environment that follow SCRUM methodology, and AGILE driven development.
- Reduced kit development time up to 20% by building automation tool in Python.

**IOTIOT.in , -***Intern,* June'18 – June'19
- Lead a team of 15 people to develop real time scalable face recognition system that can run on constrained ARM devices.
- Successfully piloted "AI Face registration" at "Women in DS, conference'19",a Stanford initiative, at Pune.
- Achieved record FPS on Arm v7 architecture using model optimisation techniques and scrutinized the effect of various tuning parameters on a standard dense neural network
- Implemented "AI-Ganpati" application for seamless "Ganpati Darshan". With Face, Audio recognition for every devotee to disperse sweet.
- Learned Embedded Linux and implemented ubuntu root file system for Hikey-970 SBC.

**SKILLS :**
- Proficient: Python, TensorFlow, OpenCV, scikit-learn, Keras, Git, Pytorch, Pandas.
- Used: Embedded Linux, Bash scripting, Docker, HyperOpt, Rdkit.

**PROJECTS :**

SenseCart- a cashierless shopping cart**—**
- A smart shopping cart with auto-checkout. Deployed on Raspberry-pi 4.
- Modelled as one-shot classification problem, creating positive, negative pairs of data from manually curated dataset of 10 classes, to feed to Siamese network.
- Trained Siamese network with BCE loss and L1 distance, using MobileNetv2 as base feature extractor.
- Achieved accuracy of 0.82. Quantized weights to FP-16 post training, pruned weights, fused layers.
- Utilised**:** OpenCV, Keras, TFlite

Real time object separation using robotic arm **—**
- Built a real time computer vision application for Hikey-970 SBC for robotic arm application. Custom trained and curated 2000+ images of 4 soap brands, with hyperparameter tuning, to get model with mAP of 93.81 % on our test dataset.
- The base architecture used was "MobilenetV2", with SSD framework for object localization.
- Custom operating system base, is configured with required dependencies for our target architecture `aarch64' on single board computer, our contributions are merged upstream with mainline OS which will be made open source.
- The trained model served using lightweight OpenCV DNN module for faster inference.
- The application gave industry leading performance of 160ms per frame or 6fps on complete utilisation of 8 core ARM Cortex-A73 and A53, adequate for real time operation.
- Utilised**:** *Application side*: Tensorflow-v1.9,Tensorboard,OpenCV-3.8, labelImg ;
  *System side*: Custom Arm-v8 embedded Linux OS, Pyserial-3.4, Robotic arm.

Isolated word recognition for home automation **—**
- Developed a speaker dependant word recognition program and deployed upon Raspberry pi, that detected syllables "ON","OFF" from external mic.
- Trained KNN classifier on extracted MFCC coefficients of training set having 50 sets of "ON", "OFF" .wav files.
- Utilised**:** Python, Scikit-learn, pyaudio, librosa library, raspbian programming.

**EDUCATION :**

**College Of Engineering, Pune(COEP) ,**
2015-2019**,** BTech- Electronics & Telecommunication,
- Electrical subsystem and Innovation head of SAE collegiate club "Team Velociracers" that designs and builds hybrid electric vehicles. Eventual National Championship winner at "SAENIS Effi-Cycle 2017."
- Pitched own start-up in warehouse automation at Siemens-BHAU entrepreneurship program to Industry panellists. Selected for full incubation at "BHAU" incubator.