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Shankara Narayanan Sethuraman

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Work Experience / Internships

Research Assistant — **Indian Institute of Science** — **Jan-June 2015**

- Worked on face and attribute recognition from low-resolution video
- Developed image annotation algorithms in OpenCV (C++)
- Deployed the system to monitor the lab in real time (logs entry and exits in the lab)

Research Assistant — **Indian Statistical Institute** — **July-Dec 2014**

- Conducted a literature study on sparse representations, non-linear prediction and zooming deblurring
- Implemented multi-image super-resolution on non-overlapping low resolution images in MATLAB

Associate Software Engineer — **IMImobile** — **Jan-June 2014**

- Handled Messaging and Voice APIs in Java
- Developed Unit Test Cases for Feed4junit library
- Developed an E-Wallet using MongoDB for the Open House App

Education

North Carolina State University — **M.S. in Electrical Engineering** — **Graduation - Aug 2017**

- Coursework - Algorithms, Object Oriented Design, Data Mining, Machine Learning, Computer Vision, Graphical Models, Computer Networks, Signal Processing, Neural Networks, Random Processes

Birla Institute of Technology and Science, Pilani — **B.E. in Electrical and Electronics Engineering** — **Graduation - Aug 2014**

- Relevant Courses - Image Processing, Embedded Systems, Numerical Analysis, Operations Research, Fuzzy Logic

Skills

Languages - Python, R, C++, Java, Ruby on Rails
Cloud - IBM Cloud, Apache Spark, Heroku, AWS
Databases - MySQL, MongoDB, PostgreSQL
Tools - MATLAB, Hadoop, Anaconda, Git, LaTeX

Technical Experience

Machine Comprehension of Text — **Python, Tensoflow, ARC Cluster** — **2017**

- Implemented an NLP pipeline using the LSTM model to find contextual relationship between passages and queries
- Generated embeddings using word2vec and used softmax activation to generate the answer
- The model exceeded baseline performance with both the bAbi (72.46%) and IMDB (82.8%) datasets

Single View Metrology — **Python, OpenCV, Blender** — **2017**

- Computed the vanishing points of an image using LSD and RANSAC
- Computed the projection and homograph matrix and generated texture maps for the XY, YZ and XZ planes
- Visualized the reconstructed 3D model using blender

Biobot Motion Classification — **Python, scikit-learn, hmmlearn** — **2016**

- 42 features were collected from a moving biobot and labeled into four classes
- PCA and k-fold cross validation was used with Fine KNN classifiers (F1 score : .81)
- Hidden Markov Model was used to improve the result (F1 score : .94)

Daytime Water Detection — **Python, scikit-learn, IBM Cloud** — **2016**

- Identified an optimal segmentation criterion through statistical inference
- Multi-scale segmentation on daylight images was performed using Naïve Bayes, SVM and ANN classifiers
- Cross validation and PCA were used to further optimize the procedure

Panoramic Image Stitching — **C++, OpenCV** — **2016**

- Implemented the SIFT descriptor to find the points of correspondence between two images
- Computed the Homography Matrix to stitch the images

Room Reservation System — **Ruby on Rails, HTML, Postgres** — **2016**

- Developed the workflow for a Ruby on Rails application to mimic the NCSU library website
- Designed the frontend in HTML, databases in Postgres and backend in Ruby on Rails
- Deployed the site on Heroku