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# SHANKARA NARAYANAN SETHURAMAN

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## EMPLOYMENT

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<b>Research Assistant</b>	<b>Indian Institute of Science</b>	<b>Jan-June 2015</b>
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- Worked on face and attribute recognition on low-resolution video
- Developed image annotation algorithms in OpenCV to extract features frame by frame

<b>Research Assistant</b>	<b>Indian Statistical Institute</b>	<b>July-Dec 2014</b>
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- 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

<b>Associate Software Engineer</b>	<b>IMI Mobile Pvt. Ltd.</b>	<b>Jan-June 2014</b>
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- Developed Unit Test Cases for Messaging and Voice APIs using the Feed4junit library in Java
- Developed a web application in Node.js to explore real time mobile data management with PouchDB
- Developed an E-Wallet using MongoDB to manage the monetary transactions for the Open House App

## EDUCATION

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<b>Raleigh, NC</b>	<b>North Carolina State University</b>	<b>Graduation - Aug 2017</b>
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- M.S. in Electrical Engineering
- Coursework: Data Science, Pattern Recognition, Neural Networks, Computer Vision, Digital Image Processing, Algorithms, Graphical Modelling, Object Oriented Development, Random Processes, Computer Networks

<b>Hyderabad, India</b>	<b>Birla Institute of Technology and Science, Pilani</b>	<b>Graduation - Aug 2014</b>
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- B.E. in Electrical and Electronics Engineering
- Coursework: Machine Learning, Digital Signal Processing, Embedded System Design, Numerical Analysis

## TECHNICAL EXPERIENCE

### Projects

- **Machine Comprehension of Text** (Spring 2017) - Paragraphs and queries from the Stanford Question and Answer Database were vectorized, fed to an LSTM to produce embeddings, passed to a Fully Connected layer with Softmax activation to predict the answer. (Python, ARC Cluster)
- **Single View Metrology** (Spring 2017) - Line segments from an image were computed using LSD. RANSAC used to acquire the vanishing points. Projection and homograph matrix and texture maps for the XY, YZ and XZ planes were computed. The 3D reconstructed model was visualized in Blender. (Python, OpenCV, Blender)
- **Segmentation of Foraminifera** (Fall 2016) - Images with 80 features each, labelled pixel-wise into 5 regions are initially classified using an SVM and ANN. CRF was implemented to improve the F1 score. (MATLAB)
- **Biobot Motion Detection** (Fall 2016) - 42 features are collected from a moving bio-bot which is classified into four classes using a KNN and SVM. HMM was implemented to improve the F1 score. (MATLAB)
- **Library Room Reservation System** (Fall 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 application on Heroku. (Ruby on Rails, HTML, Postgres, Heroku)
- **Daytime Water Detection** (Spring 2016) - Identified an optimal segmentation criterion through statistical inference to detect water using Naïve Bayes, SVM and ANN classifiers. Cross validation and PCA were used to further optimize the procedure. (Python, IBM Cloud)
- **Panoramic Image Stitching** (Spring 2016) - Implemented the SIFT descriptor to find the points of correspondence between two images. Computed the Homography Matrix to stitch the images. (C++, IFSTool)

## CERTIFICATION

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Machine Learning by Stanford University on Coursera. Certificate earned on January 21, 2017

### Languages and Technologies

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**Programming** - Python, R, C++, Java, Ruby on Rails

**Databases** - MySQL, MongoDB, Postgres

**Cloud Technologies** - IBM Cloud, Apache Spark, Heroku

**Software** - MATLAB, Pycharm, Rstudio, RubyMine