

# CIRRICULUM VITAE

## ASHISH RANJAN

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### EDUCATION

- **B.Tech in Electrical Engineering** from **Indian Institute of Technology, Banaras Hindu University**, Varanasi, with a CGPA of 7.93/10 (absolute grading).

### RESEARCH INTERESTS

- Artificial Intelligence, Deep Learning, Natural Language Processing

### TECHNICAL SKILLS

- **Languages:** Python, JAVA, C
- **Tools & Frameworks:** Theano, Numpy, Scipy, Spring 3.0, MATLAB, Octave, HTML, XML

### PROFESSIONAL EXPERIENCE

Senior Software Engineer, Samsung Research India, Bangalore

[June'13- Present]

#### **Smart Assistant (Artificial Intelligence, Deep Learning), Advanced Technology Lab Team**

- Currently working on natural language generation using recurrent neural networks (LSTM).
- Developed context based inference engine which uses the knowledge base to deduce the activities in a SMS/WhatsApp conversation and set proper reminder for the user.
- Developed the knowledge base involving causal models, activity models and equivalent senses models.
- Developed ontology manager module for efficiently processing the OWL ontology file and database.

#### **Real Time Facial Emotion Recognition (Computer Vision), Multimedia Team, System SW & SOC**

- Developed the module for facial feature extraction and dimensionality reduction using principal component analysis.

#### **Sluggishness detection using Artificial Neural Networks(Machine Learning), Creative Labs**

- Implemented proof of concept for sluggishness detection in smartphones using Artificial Neural Networks in Creative Lab Contest.

#### **Camera Sensor Data Compression (Image Processing, Data Compression), Multimedia HWIP Team, System SW & SOC**

- Designed and implemented a Scalable, High Throughput HW IP to decode high resolution Bayer images, compressed using a scheme based on Elias Gamma encoding of Run Lengths.
- Conceived and formally verified Architectural and Micro-architectural improvements in design reducing the Gate Count by 4x.

#### **Mobile vision processing unit(Hardware IP Verification), Multimedia HWIP Team, System SW & SOC**

- Developed the image dithering module (hardware design).
- Verified the mobile vision processing modules for 3-D scanning and memory interface in UVM.

**Image Compression SPIHT IP for Smartphone Display, Multimedia HWIP Team, System SW & SOC**

- Optimized the SPIHT algorithm for implementation in hardware.
- Worked on RTL implementation and functional verification of encoder and decoder.

**PROFESSIONAL DEVELOPMENT ACTIVITY**

**Coursera: Machine Learning by Prof. Andrew Ng, Stanford University**

- Multivariate linear regression, Logistic regression, One-vs-all classification, Regularization.
- Implemented digit recognition algorithm using Neural Networks.
- Implemented Email Spam detector using Support Vector Machines (SVMs)
- Implemented unsupervised learning algorithm: K-means.
- Implemented data compression algorithm on image using PCA.
- Implemented collaborative filtering algorithm for movie recommendation to users.
- Implemented network anomaly detection algorithm.

**PATENTS AND PUBLICATIONS**

- **“Method and Apparatus for Storing, Processing and Reconstructing Full Resolution Image out of Sub Band Encoded Images”** granted A1 by Samsung HQ Patent Office and filed in US.

**EXTRACURRICULAR ACTIVITIES**

**Volunteer work**

- Volunteer Work – “SRI-B Seva” - a company promoted organization driven by employees. [http://www.samsung.com/in/sri-b/srib\\_seva.html](http://www.samsung.com/in/sri-b/srib_seva.html)
- Volunteer Work – “Kashi Utkarsh” - An initiative of IIT BHU teachers and students to provide education to children living in slum areas. <http://kashiutkarsh.com/>

**Positions of Responsibility**

- Currently mentoring fresh recruits in the advanced technology lab team.
- Mentored intern in facial recognition project at Samsung Research.
- Coordinator - Prastuti'12 - Paper Presentation Contest EEE Department, IIT BHU.
- Mentored students in many Dance and Theatre workshops.