

# Vishal K. Gupta

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## Education

### Master of Science, Computer Science and Engineering

(Aug'16-Dec'17)

University of Florida | **GPA: 3.83/4.00**

### Bachelor of Technology, Electrical Engineering

(July'10-June'14)

Indian Institute of Technology Kanpur, India | **GPA: 7.0/10**

## Professional Experience

### Qualcomm Inc. | Graduate Engineering Intern

(May'17-Aug'17)

- Deployed multitude of **deep learning algorithms** to improve upon **traditional camera designs and capabilities**
- **Image regression using convolutional neural networks** on raw data replacing HW Image and Signal Processor
- **Multi-resolution approach** to improve on luma and chrome noise and color tone improvement for **large range of ISOs**

### Qualcomm India Pvt. Ltd. | Associate Engineer

(June'14-Aug'16)

- **Software centric verification** of ARM TrustZone and **virtualization extensions** based IPs, drivers & **Cryptographic engines**
- Debugged **security software patches** for successful **development & integration of firmware** on **Snapdragon 820, 810, 617** etc.
- **Improvised backend verification infra** by automation **reducing man-hours by 3x & 2x boost in verification coverage**

### Intelligent Data Engineering & Automation (IDEA) Laboratory, IIT Kanpur | Research Associate

(May'12-Dec'12)

- Thoroughly analyzed acoustic signals in time, frequency and wavelet domain using **MATLAB Signal Processing modules**
- Developed **Softmax Classifier** over features from **Sparse Auto-Encoder** network for **vault prediction from acoustic emission**
- **Prototyped** the fault detection module on **Android** for increased versatility and **validated its feasibility for Air Compressors**

## Skills

C/C++ (3+ yrs) • Java (3+ yrs) • Python (5+ yrs) • MATLAB (5+ yrs) • TensorFlow • Keras • PyTorch • MySQL • HTML • Linux • Android

## Awards & Scholarships

**Gartner Group Info Tech Scholarship** for having outstanding academics and research contribution among **700 Master's students** in Dept. of CISE in the academic year 2016-2017.

## Publication

- Nishchal Verma, **Vishal Gupta**, Mayank Sharma & Rahul Kumar Sevakula, "**Intelligent Condition Based Monitoring of Rotating Machines using Sparse Auto-Encoders**", IEEE International Conference on Prognostic Health Management (IEEE PHM), 2013
- Anup Zade & **Vishal Gupta**, "**Software Centric Verification of xPU and other Security Blocks**" In QBUZZ'15, Annual Conference organized by Qualcomm India Pvt. Ltd.  
(\* Manuscript unavailable publicly due to Qualcomm's Policy)

## Academic Projects and Research Experience

### SmartGator: Multi-Domain Chatbot

(Sept'16-Dec'16)

- Deployed **LSTM network** based architecture to output **variable length semantically correct replies** to user input
- Used **word2vec model** along with **attention mechanism** to improve the quality and context specificity of output replies
- Incorporated **multi-domain knowledge** via training on large & diverse dataset resulting in **chatbot being able to answer a range of question: from information centric questions to understanding emotions**

### Transfer Learning on *Kaggle Cats & Dogs* Dataset

(Sept'16-Dec'16)

- Extracted CNN feature using **TensorFlow API & Inception-v3 (GoogLeNet) framework** pre-trained on ImageNet Dataset
- Deployed **Linear & Kernel SVM** accompanied by **hyper-parameter optimization using Bayesian approach**
- Registered 2-class accuracy as high as **62% with just 250 samples, 70% for 5000 samples and 63% for 3-class classification**

### Mid-Layer CNN Features for Visual Recognition

(Feb'14-Apr'16)

- Exploited **spatial feature representation** which out-performed state-of-the-art methods with each added layer of **spatial pyramid**
- Extended **sample based sub-categorization approach** to multi-class scenario for discovering unique **intra-class discriminative cues** which further **augmented classifier performance by 2-3%**
- Introduced **spatial sub-categorization** against sample based sub-categorization which **outperformed the later by 4-5%** on various visual recognition task with **SGD-SVM classifier**

## Relevant Coursework

Advance Machine Learning • Artificial Intelligence Programming • Computer Vision & Image Processing • Sparse Coding in Sensing • Intro to Data Science\*\* • Big Data Ecosystems • Probability and Statistics • Natural Language Processing • Convex Optimization in SP/COM • Statistical Simulation & Data Analysis • Distributed OS Principles • Advance Data Structures • Analysis of Algorithms • Programming Language Principles\*\*  
(\* \*\* In progress )