

Nishanth Vimalesh

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EDUCATION

Master of Science in Electrical and Computer Engineering

North Carolina State University: *GPA* : 3.875/4.0

Raleigh, NC

Aug. 2018 – May 2020

Relevant Coursework: Neural Networks & Deep Learning, Computer Vision, Pattern Recognition, Digital Imaging Systems, Data Science, Design and Analysis of Algorithms, Probability & Random Processes

Bachelor of Engineering in Electronics and Communication Engineering

Anna University (SSN College of Engineering): *GPA* : 8.26/10

Chennai, India

Aug. 2014 – May 2018

SKILLS

Technical: Data Science, Machine Learning, Deep Learning, Computer Vision, Natural Language Processing

Languages: C, C++, Python, MATLAB, SQL

Frameworks & Tools: PyTorch, TensorFlow, Keras, Hadoop, Pandas, OpenCV, AWS, Scikit-learn, CUDA

Operating Systems: Linux, Windows, MacOS

EXPERIENCE

- **Data Science Consultant** (NC State University - Raleigh, NC) *Jan. 2020 - Present*
Providing students and faculty with one-on-one or group consultations on machine learning, deep learning and computer vision. Assisting with the development and deployment of machine learning workshops
- **Graduate Researcher** (NC State University - Raleigh, NC) *Jul. 2019 - Dec. 2019*
Worked on the integration of a capsule-based architecture to the R-CNN framework to predict the pose and shape of humans under Dr. Tianfu Wu
- **Software Development Intern** (Tec-Sol India Ltd. - Chennai, India) *May 2016 - Jul. 2016*
Developed source code for the control of stress and strain measurement devices and the testing of equipment using Dynamic Fatigue Testing Machine and Brinell & Vickers Hardness testers

PROJECTS

Bilinear Multimodal Fusion for Visual Question Answering (Python, PyTorch)

- Trained a model to tackle the VQA problem using a series of attention-based reasoning steps each performed by a recurrent Memory, Attention and Composition (MAC) cell
- Exploited the principle of bilinear fusion to combine the two modalities (image and question)
- **Obtained state-of-the-art accuracy on validation after training on only 10% of the GQA dataset**

3D Human Pose Estimation using Monocular Images (Python, PyTorch)

- Adopted a weakly-supervised transfer learning method that uses geometric constraints for regularization
- Augmented the architecture by replacing the simple baseline with the state-of-the-art High Resolution Network
- **Decreased the MPJPE error by 4%**

Body Rocking Behaviour Detection (Python, Keras)

- Trained a neural network to detect body-rocking behaviour in blind autistic subjects using inertial measurements
- Compared the performance of various architectures and achieved best results using CNN-LSTM-based architecture
- **Topped the leaderboard with the best F1-score among classmates**

Face Image Classification using Generative Models (Python, TensorFlow)

- Performed image classification using Gaussian, Mixture of Gaussian Model, t-distribution and Factor Analyzer
- Estimated the parameters using Maximum-Likelihood (MLE) and Expectation-Maximization (EM) algorithm
- Evaluated using ROC curve and F1-score, achieved best performance using Factor Analyzer

Implementation of a Hybrid Wireless Sensor Network using a Robotic Sink (Raspberry Pi, Python)

- Implemented a low-cost fire monitoring sensor system that detects fire, alerts on detection and extinguishes it
- Built a static sensor network that detects the location of maximum fire intensity and alerts a robotic sink
- Adopted a path planning algorithm for the robot to reach the location in the shortest amount of time

Compression using k-means clustering (Python, OpenCV)

- Developed a image compression model using k-means clustering algorithm
- Analyzed distortion for different rates and patch sizes