VIKAS **VARMA**

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PROFESSIONAL SUMMARY

A self-motivated software engineer with a constant strive to learn and develop compelling technology. I am working as a Software Engineer in Test for Image Processing Toolbox at Mathworks to develop high performance image processing and computer vision algorithms and applications for MATLAB.

EDUCATION

TEXAS A&M UNIVERSITY   **Class of 2018**
College Station, TX
Master of Science | Electrical Engineering | GPA: 3.88

Coursework: Advanced Digital Signal Processing, Probabilistic Graphical Modeling, Bayesian Pattern Recognition, Estimation & Detection Theory

NATIONAL INSTITUTE OF TECHNOLOGY   **Class of 2014**
Warangal, India
Bachelor of Technology | Electronics & Communication Engineering | GPA: 8.26

EXPERIENCE

THE MATHWORKS, INC   **Feb 2019 – Present**
Natick, MA
Software Engineer in Test, Image Processing Toolbox

Devised test strategies, authored automated test suites and contributed towards functional design, performance evaluation and continuous integration of image processing and computer vision feature and algorithms. Developed tooling infrastructure to optimize test development and code integration in internal build & test systems. Some of my projects include:

- Developed tests for loading, processing and display of large out-of-core datasets used in large scale image/volumetric processing and deep learning pipelines in MATLAB.
- Designed and developed a streamlined test framework with automated test code generation capability for MATLAB apps developed across MathWorks.
- Architected and developed automated test suites for MATLAB apps that perform semantic segmentation, image labeling, hyperspectral and medical volume visualization.
- Studied architectural data organization schemes of volumetric image files to generate test data and develop a writer utility to test MATLAB readers which parse such files.
- Mentored and devised projects for summer interns geared to improve the stability and reliability of test suites.

THE MATHWORKS, INC   **Jun 2017 – Dec 2017**
Natick, MA
Software Engineering Intern in Test, Image Processing & Computer Vision

- Co-authored image flat field correction MATLAB algorithm for correcting images affected by irregular illumination during acquisition.

TEXAS A&M UNIVERSITY   **Feb 2018 – Apr 2018**
College Station, TX
Teaching Assistant, Signals & Systems

ORACLE   **Jun 2014 – Apr 2016**
Hyderabad, India
Applications Engineer, Oracle Transportation Management

- End-to-end redesign of Oracle Transportation Management's customs and trade expense filing system.

PROJECTS

- Employed Faster R-CNN object detector to localize and classify roof material using large out-of-core drone aerial imagery collected from disaster prone urban environments.

- Trained a SRGAN network for single image super-resolution for a 4x scaling factor.

- Developed a binary classifier with a DenseNet backbone to detect pneumonia in chest x-rays using Kaggle's Chest X-ray Images dataset.

- Implemented a robust Halide image denoising pipeline through block matching and collaborative filtering (BM3D) used in medical imaging.

- Fabricated a C++ library to load and process patches of data from a tiled multi-resolution BigTIFF image file.

- Predicted gene regulatory networks from gene expression levels through probabilistic inference on a Bayesian Network model.

Master's Thesis
A faster RNA secondary structure prediction algorithm based on constrained sub-optimal stem motif detection congregated to construct the complete structure through global energy minimization.

Bachelor's Thesis
Multiclass classification of cardiac arrhythmia using a neural network modeled against features extracted from ECG signals sampled from the PhysioNet database.

github.com/vikasvarma

SKILLS

- MATLAB
- Python
- C/C++
- Java
- Javascript
- SQL
- Halide
- PyTorch
- OpenCV
- Scikit
- ThreeJS & ReactJS
- Visual Studio
- Git & Perforce
- CMake

INTERESTS

- Image Processing & Computer Vision
- Deep Learning
- Medical Imaging
- Bayesian Classification
- Probabilistic Graphical Modeling
- Machine Learning
- Computational Biology

WORK AUTHORIZATION

Authorized to work for any US employer through a H1-B Visa upto 08/22 (extendable to another 3 years). Will require sponsorship after the lapse of this authorized period.

ACTIVITIES & HOBBIES

Graphic Design | Soccer | Tennis | Cooking | Photography