AKHIL PERINCHERRY

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EDUCATION

Master of Science in Electrical and Computer Engineering,
University of Florida (UF), College of Engineering May 2016

- GPA: 3.70/4.0
- Relevant Coursework: Stochastic Methods in Engineering, Machine Learning, Image Processing and Computer Vision, Adaptive Digital Signal Processing, Spectral Estimation, Neural Signals and Systems, Biometric identification.

Bachelor of Engineering in Electronics and Communications,
PES University (PES) Jun 2013

- GPA: 8.41/10.0
- Relevant Coursework: Random process and probability, Linear Algebra, Pattern Recognition, Signals and Systems.

WORK EXPERIENCE

Machine Learning Research Engineer, Ford Motor Company,
Ford Research and Advanced Engineering Mar 2017 - Present

- Developed vision based lane estimation models for automated driving perception features.
- Developed synthetic data generation software for training, using gaming engines.
- Worked on generative modeling using GANs for domain adaptation, mainly on sim to real domain translations.
- Developed a production intended multi-camera tracker within Ford's vehicle software framework.
- Implemented a production trailer feature and ported a lane estimation neural network model to an embedded hardware to run in-vehicle.
- Developed LiDAR point-cloud based object detection model for perception features. The model was ported to C++ from Python and integrated to the production code-base.

Graduate Research Student, University of Florida,
Oweiss Lab under Dr. Karim Oweiss Jan 2016 - Dec 2016

- Worked on a real-time rat whisker tracking system under IR light in a stereo framework.
- Performed whisker detection using CNNs and fit splines.
- Performed pose estimation from rat images and tracked whisker states.

Graduate Teaching Assistant-Foundations of Digital Signal Processing, University of Florida,
under Dr. Frederick Taylor Aug 2015 - Dec 2015

- Delivered lectures for 90 enrolled students as part of the course.
- Designed quizzes and homework to enforce associated concepts.

Research Assistant, Indian Institute of Science,
Computer Vision and Artificial Intelligence (CVAI) Lab under Dr. K R Ramakrishnan Aug 2013 - Jun 2014

- Developed "Touch-Hyperlink" using a Projector-Camera Interface.
  - A tabletop surface is turned into a virtual touch pad using Microsoft Kinect.
  - Optical Character Recognition and Text to Speech blocks were incorporated for additional processing on the text image.
- Performed arm vein detection and video magnification using Kinect sensor.

Undergraduate Research Intern, Michigan State University,
Energy Reliability and Security (ERISE) Lab under Dr. Joydeep Mitra Smart Grids Jun 2012 - Aug 2012

- Designed a zigbee mesh-based smart grid HAN model in home automation for fine-grained control of energy consumption depending on the dynamic utility load prices.
- Presented work at the Summer Undergraduate Research Forum (SURF). (*http://urca.msu.edu/files/midsure/programs/midsure-program_2012.pdf*-Page65)

TECHNICAL SKILLS

Languages	: Python, C++, Git, MATLAB, LaTeX
Libraries/Frameworks	: PyTorch, Tensorflow, OpenCV, OpenNI
Operating Systems	: Microsoft Windows, Linux
Programming/Interfacing	: Microsoft Xbox Kinect, TI-MSP430

PATENTS (GRANTED/FILED)

- **A Perincherry**, K Singh, N Nagraj Rao **"Vehicle Intersection Operation"** *US Patent App. 20,210/001,844* - CNN+LSTM based model to predict vehicle right-of-way at intersections.
- **A Perincherry**, C Cruise **"Domain Generation via Learned Partial Domain Translations"** *US Patent App. 16/777017* - Generative modeling to generate novel domain data.
- N Nagraj Rao, **A Perincherry "Sensor Domain Adaptation"** *US Patent App. 17/330692* - Generative modeling to translate legacy sensor data domain to newer domain.
- **A Perincherry**, A Mordovanakis, S Suthar, A Chand **"Neural Network Object Identification"** *US Patent App. 17/228765* - Radar camera sensor fusion to perform object 3D shape identification.
- **A Perincherry**, I Patel, K Min **"RCCC to RGB Domain Translation with Deep Neural Networks"** *US Patent App. 16/799258* - Generative modeling to translate automotive sensor domain to common domains.
- N Jaipuria, G Sholingar, V Murali, R Bhasin, **A Perincherry** **"Vehicle Image Generation"** *US Patent App. 20,210/004,608* - Generative modeling to improve driving safety features via domain adaptation.

PUBLICATIONS

Adarsh Appaiah, **Akhil Perincherry**, Ajinkya Sanjeev Keskar and Vijaya Krishna **"Spectrum Sensing in Cognitive Radio Based on Compressive Measurements"**. *International conference on Emerging trends in Communication, Control, Signal Processing and Computing Applications (IEEE-C2SPCA)* Bangalore, India 2013

PROJECTS

Comparison of Machine Learning algorithms , *UF* Jan 2016 - Apr 2016

- Designed a Majorized Multi-class Kernel SVM from scratch and it was compared with Random Forests, Logistic Regression, Deep Neural Nets, Decision Trees, libsvm

Speaker Recognition using Adaptive Online algorithms , *UF* Aug 2015 - Dec 2015

- Implemented a novel speaker recognition model using RLS algorithm
- The model showed better performance metrics than the standard MFCC-VQ technique of speaker recognition

Adaptive noise cancellation and speech detection models , *UF* Aug 2015 - Dec 2015

- Implemented a Manatee sound detection model using Recursive Least Squares (RLS) in an underwater noisy environment
- Implemented a model to extract the speech from a speech plus vacuum cleaner noise environment using a Normalized Least Mean Squares (NLMS) based method

Classification of Motor Imagery Tasks, *UF* Jan 2015 - May 2015

- Developed a model that classifies between left finger and tongue imagery tasks using a combination of Common spatial pattern and Support vector machines
- The model developed had an accuracy of 92%, the highest that has been reported for the particular dataset (87%).

Maximum Likelihood Estimation (MLE) and CRB analysis for problems in Array signal processing, *UF* Jan 2015 - May 2015

- Estimated complex amplitude in presence of noise and interference from multiple snapshots with an unknown covariance matrix
- Compared MLE for a diagonal and non diagonal unknown covariance matrix and its implications with respect to its Cramer Rao Bound(CRB)

Compressive Signal Processing, Signal Processing for Communication Lab, *PESIT* Jan 2013 - May 2013

- Detection: Developed a novel technique to detect channel occupancy in Cognitive Radio using Compressive Sensing without reconstructing the signal. The work was published in an IEEE conference
- Estimation: Developed a novel technique to estimate the channel response using Compressive Sensing without the reconstruction block

OUTREACH

Cluster coordinator for South East Bangalore, *Youth For Seva* Jul 2013 - Jun 2014

Involved in social service activities including sapling planting, awareness programs and teaching basic subjects to the specially-abled.

Mentor at Center for Leadership and Excellence, *Mentor UF* Jan 2016 - Jun 2016

Job involves mentoring the assigned middle school student and helping him/her out in any area of concern.

Mentor through IEEE-Eta Kappa Nu (HKN), *UF* Aug 2015 - Jun 2016

Invited to be a member of IEEE-Eta Kappa Nu, an honor society and mentored undergraduate students through HKN.