Shruti Gullapuram

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Github: https://github.com/gshruti95

Education

Master of Science in Computer Science **Expected Graduation: Dec 2018**
University of Massachusetts Amherst *GPA: 3.95/4.0*
Coursework: Computer Vision, Machine Learning, Neural Networks, Reinforcement Learning, NLP
Graduate Teaching Assistant for Introduction to Simulation, Spring '18

Bachelor of Technology in Electronics and Communication Engineering **2013 - 2017**
International Institute of Information Technology Hyderabad
Dean's Merit List for 3 consecutive semesters, Undergraduate **Research Award** '16-'17
Coursework: Data Structures, Algorithms, Operating Systems, Data Mining, Digital Image Processing

Technical Skills

Programming/Scripting Languages: Python, C++, C, Matlab
Frameworks & Libraries: PyTorch, Caffe, Keras, Python scientific stack, OpenCV

Research & Experience

Machine Intelligence Research Intern, United Technologies Research Center **East Hartford, CT**
Presence Detection for Energy Efficient Systems supported by ARPA-E *May'18-Present*
- Created a prototype module for people presence detection with the goal of reducing energy consumption of HVAC systems
- Applied machine learning algorithms for people counting from low resolution infrared cameras and respiration detection using radar signals

Microsoft Research Maluuba Mentorship
Answering Visual-Reasoning Questions on Charts and Graphs *Feb-May'18*
- Built novel models leveraging deep neural mechanisms for visual reasoning by using **Python** and **PyTorch**, that can achieve nearly state-of-the-art performance on the FigureQA task: (https://datasets.maluuba.com/FigureQA)
- Implemented new ideas drawn from Stacked Co-Attention, FiLM architecture, and improvements on RN (relational network) performance

Machine Learning Developer, CASA Engineering Research Center
ML Techniques for Precipitation Nowcasting *Mar-May'18*
- Explored machine learning techniques for short-term prediction of rainfall (nowcasting) from combined time-sequences of past spatial fields of weather radar reflectivity images and integrated precipitable water (IPW)

Undergraduate Independent Study
Affect Recognition in Advertisements *Sep'16-Apr'17*
- Developed a computational model in **Python**, **Matlab**, and **Caffe**, that estimates the state of engagement (arousal) and emotion (valence) in viewers while watching multimedia content, particularly ads
- Trained neural networks on collected EEG data, used multi-task learning to achieve F1-score of 94% on audio-visual features
- Targeted ads via an optimization framework based on consumer psychology rules, with the goal of maximizing ad recall and user experience

Student Developer, Google Summer of Code 2016
Red Hen Lab, (Blog: http://bit.ly/2hrI7N9) *May-Aug'16*
- Developed and deployed an end-to-end visual recognition pipeline in **Python** for the UCLA NewsScape dataset which tags news videos based on camera shot type (anchor/news person, weather report, etc.), scene type, and detected objects
- Experimented with CNN architectures using the **Caffe** framework, compiled a training dataset of 10,000 images, and employed transfer learning. Was able to achieve an F1-score of 85%.

Publications & Presentations

- Shruti Gullapuram et. al, "Affect Recognition in Ads with Application to Computational Advertising", ACM Int'l Conference on Multimedia (**ACM MM**), 2017 (**7.5% acceptance rate, Top 50 out of 650 accepted papers**)
  URL: http://dx.doi.org/10.1145/3123266.3123444
- Shruti Gullapuram et. al, "Evaluating Content-centric vs User-centric Ad Affect Recognition", ACM Int'l Conference on Multimodal Interaction (**ACM ICMI**), 2017
  URL: http://dx.doi.org/10.1145/3136755.3136796
- "Shot Classification from News Videos", Technical Talk, International Conference on Multimodal Communication (**ICMC**), 2017

Other Projects

- **Soccer Video Analytics**: Developed a pipeline in *Matlab* which tracks players, ball, and events occurred in soccer match videos
- **Seam Carving for Content Aware Image-Resizing**: Implemented a dynamic programming algorithm by Avidan et al. to automatically re-size images while preserving content. Further experimented with image saliency and object detectors such as YOLO to achieve aesthetically better results.
- **Artist Identification from Stylized Images**: Implemented 3 research papers to perform arbitrary style transfer in images. Built a neural network model to identify artist style applied to unseen content.