

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: 3.96/4.0

Coursework: Computer Vision, Machine Learning, Neural Networks, NLP, Affective Computing

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 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, Darknet, Caffe, Keras, Python scientific stack, OpenCV

Research & Experience

United Technologies Research Center, ML Research Intern

Hartford, CT - Summer'18

Presence Detection for Energy Efficient Buildings, supported by ARPA-E

(C++, Darknet, Python, MATLAB)

- Created a prototype module for presence detection, with the end-goal of reducing energy consumption of HVAC systems
- Captured and labelled training data from low resolution infrared cameras, dealing with issues such as thermal drift and NUC
- Evaluated the trained model's performance on data from two camera vendors, and compared full-body vs. torso annotation labels
- Also contributed in testing the respiration detection algorithm, which is based on image and radar signal processing

Microsoft Research Maluuba

Feb-May'18

Answering Visual-Reasoning Questions on Charts and Graphs

(Python, PyTorch)

- Built novel models leveraging deep neural mechanisms for visual reasoning that can achieve nearly state-of-the-art performance on the FigureQA task: (<https://datasets.maluuba.com/FigureQA>)
- Improved performance by 2% through new ideas drawn from Stacked Co-Attention, FiLM architecture, and Relational Networks

Undergraduate Independent Study

Sep'16-Apr'17

Affect Recognition in Advertisements

(MATLAB, Python, Caffe)

- Developed a model that estimates the state of arousal and emotion (valence) in viewers while watching advertisements
- 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 psychology rules, with the goal of maximizing ad recall and user experience

Google Summer of Code, Student Developer

May-Aug'16

Red Hen Lab, (Blog: <http://bit.ly/2hr17N9>)

(Python, Caffe)

- Developed and deployed an end-to-end visual recognition pipeline for the UCLA NewsScape dataset which tags news videos based on camera shot type (anchor/news person etc.), scene type, and detected objects
- Compiled own training dataset of 10,000 images, and employed transfer learning. Was able to achieve an F1-score of 85%.

Publications

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

Other Projects

- **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 three research papers to perform arbitrary style transfer in images. Trained a neural network model to identify artist style applied to unseen content.