SATYA NARAYAN SHUKLA

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EDUCATION

University of Massachusetts Amherst   **Fall 2016 - Present**
MS/Ph.D. in Computer Science
CGPA - **4.0/4.0**
Indian Institute of Technology Kharagpur   **July 2010 - May 2015**
Dual Degree: Bachelors - Electrical Engineering, Masters - Instrumentation & Signal Processing
CGPA - **9.25/10.0** (Rank - 1/30)

PUBLICATIONS

- Interpolation-Prediction Networks for Irregularly Sampled Time Series. (ICLR'19, New Orleans)*   [*:1st Author]
- Modeling Irregularly Sampled Clinical Time Series. (ML for Health Workshop - NeurIPS'18, Montreal)*
- Prediction and Imputation in Irregularly Sampled Clinical Time Series Data using Hierarchical Linear Dynamical Models. (EMBC '17, Korea)
- Estimation of Blood Pressure from Non-invasive Data. (EMBC '17, Korea)*
- Non-invasive Cuffless Blood Pressure Measurement by Vascular Transit Time. (VLSID '15, India)*

EMPLOYMENT

Research Assistant   **University of Massachusetts Amherst**   **Fall 2016 - Present**

Interpolation-Prediction Networks for Irregularly Sampled Time Series
· Proposed a new deep learning architecture for addressing the problem of supervised learning with sparse and irregularly sampled multivariate time series.
· Our model outperformed a range of baseline and recently proposed models on both classification and regression tasks.

Research Intern   **Microsoft Research, Redmond**   **Summer 2018**
· Developed a novel method for time series forecasting with uncertainty estimates using Deep Neural Networks.
· Investigated the effectiveness of likelihood-based loss functions in quantifying uncertainty estimates.
· Proposed a multi-time scale ensemble approach to improve the uncertainty estimates for long horizon forecasts.

Research Intern   **Xerox Research Centre India**   **Summer 2015**
· Improved the prediction results in modeling irregularly sampled physiological signals over the state-of-the-art Multi Task Gaussian Process method which inherently fits the irregular sampling through temporal kernels.
· Addressed the challenge of irregular sampling by incorporating a temporal difference variable within the state equation of the Kalman filter model whose parameters are estimated using observed data.

Research Intern   **Samsung Electronics, Korea**   **Summer 2013**
· Developed an emotion detection system based on Active Shape Models to identify human alertness and emotions.

PROJECTS

Analysis of Dropout in Deep Networks   **Oct 2017 - Dec 2017**
· Exposed surprising differences between the behavior of dropout and more traditional regularizers like weight decay.
· Presented a counterpoint to the suggestion that dropout discourages co-adaptation of weights.

Deep Learning Approach to Generate Image Captions   **Oct 2016 - Dec 2016**
· Developed a model with Deep Convolutional network to encode an image into a fixed-length vector representation and Long Short Term Memory (also experimented with RNNs) to decode this representation into a caption.
· Our model with LSTM as language model yielded comparable results with the state-of-the-art models.

Aspect Based Sentiment Analysis using Deep Learning   **Oct 2016 - Dec 2016**
· Implemented a Convolutional Neural Network to identify the aspects present in a review and predicted their sentiment/polarity; and also experimented with adding additional features such as POS tags.
· Our model yielded better results than the top teams at Semantic Evaluation 2015 Competition in aspect identification task for Laptop domain data while ranked 3rd for Restaurant domain data.

Blood Pressure Estimation from Photoplethysmogram signal*(Master's Thesis)*   **Aug 2014 - Apr 2015**
· Estimated blood pressure (BP) from the features of the PPG using NNs and Multi-Task Gaussian Processes.
· Evaluated both the models on 100 patient data extracted from the MIMIC database and found that the proposed methods give better results in comparison to other non-invasive techniques used for BP estimation.

Non-invasive Cuffless Blood Pressure Measurement*(Bachelor's Thesis)*   **Aug 2013 - Apr 2014**
· Project deals with the estimation of human blood pressure from using PCG and PPG signals.
· Estimated the BP with an accuracy of more than 94% when compared to conventional BP measuring devices.

AWARDS AND HONORS

Institute Silver Medal; Best Project Award for Master's Thesis; Samsung Innovation Award 2014; WISE Scholarship

TECHNICAL SKILLS

Python; Keras; TensorFlow; Torch; SQL; C; Perl; Java; MATLAB; R; Verilog; GIT; LaTeX; Solidworks; LabVIEW