Surya Teja DEVARAKONDA

PERSONAL DATA

EMAIL:	suryatejadev@cs.umass.edu
PHONE:	+1 (413) 522 4068
CONTACT:	27 Hadley Road, Apt 190, Sunderland, MA 01375
LinkedIn:	linkedin.com/in/suryatejad
Github:	https://github.com/suryatejadev
Website:	suryatejadev.github.io/

EDUCATION

University of Massachusetts Amherst Amherst, MA
Master of Science in COMPUTER SCIENCE Fall 2017 - Present

- GPA: 4.0/4.0

- Expected Graduation date: May 2019

- COURSES: Neural Networks - A Modern Introduction, Reinforcement Learning, Algorithms for Data Science, Probabilistic Graphical Models, Database Design and Implementation, Natural Language Processing*, Machine Learning*, Computer Vision*

India Institute of Technology Hyderabad Hyderabad, India
Bachelor of Technology (Honors) in ELECTRICAL ENGINEERING Fall 2013 - Spring 2017

- GPA: 3.41/4.0

- KEY COURSES: Pattern Recognition and Machine Learning, Image and Video Processing, Advanced Digital Signal Processing, Adaptive Signal Processing, Data Science for Internet of Things, Data Analytics, Information Science, Random Processes, Multivariable Calculus

- HUMANITIES COURSES: Macro Economics, Human Computer Interaction

PUBLICATIONS

2018

- **Amplitude-scan Classification using Artificial Neural Networks** LINK PDF
  Kunal K. Dansingani, Kiran Kumar Vupparaboina, **Surya Teja Devarakonda**, *Soumya Jana, Jay Chhablani, and K. Bailey Freund*
  Scientific Reports (Nature), 2018, 8(1), p.12451.

2017

- **A Convolutional Neural Network Approach for Abnormality Detection in Wireless Capsule Endoscopy** LINK PDF POSTER
  Anjany Kumar Sekuboyina, **Surya Teja Devarakonda**, *and Chandra Sekhar Seelamantula*
  Proceedings of IEEE International Symposium on Biomedical Imaging (**ISBI**), 2017, (pp. 1057-1060).

2016

- **Automated Detection of Retinal Disorders from OCT Images using Artificial Neural Network** LINK PDF
  Surya Teja Devarakonda, *Kiran Kumar Vupparaboina, Ashutosh Richhariya, Jay Chhablani,*

and Soumya Jana
India Conference (**INDICON**), 2016 IEEE Annual, pp. 1-6. IEEE, 2016.

RESEARCH EXPERIENCE

IISc Bangalore Spectrum Lab   MAY-JULY 2017
Computer Vision Research Intern
MENTOR: Prof. Chandra Sekhar Seelamantula

- Worked on multi-class abnormality detection and segmentation of wireless capsule endoscopy images.

- Built a convolution neural network model for the task, while dealing with challenges like data insufficiency (train data of only around 100 images) and class imbalance. Achieved an improvement over the state of the art results in terms of area under the ROC curve for 5 of the 9 considered diseases.

- This work was accepted as a conference paper accepted at ISBI, 2017.

IIT Hyderabad Immersive Multimedia Lab   JAN-APR 2017
Undergraduate Researcher
MENTORS: Prof. Sowmya Jana, Jay Chhablani

- Diabetic Retinopathy and Macular Degeneration Detection in OCT B-Scan Images

  - Worked on detection of Age-related Macular Degeneration and Diabetic Retinopathy in OCT B-scan retinal images.

  - Developed efficient classifiers using artificial neural networks (ANNs), support vector machines, decision trees and ensemble methods and features like structural features like retinal, choroidal thicknesses, and stromal-luminal ratio. Achieved an accuracy of 98.7%.

  - This work was accepted as a conference paper at INDICON, 2016.

- Amplitude-scan Classification using Artificial Neural Networks

  - Developed an ANN for distinguishing and classifying amplitude-scan reflectivity-function profiles representing signatures of diseases like serous pigment epithelial detachment (PED) and serous retinal detachment (RD).

  - Achieved high accuracies after training on only 24 eyes, with evidence of good generalization on unseen data.

  - Accepted as a conference paper accepted at Nature Scientific Report, 2018.

PROFESSIONAL EXPERIENCE

GE Healthcare   JUN-AUG 2018
Computer Vision Intern in X-Ray division
MENTOR: Gireesha Rao

- Developed a classifier to predict anterior-posterior or posterior-anterior nature of Chest X-Ray images by fine-tuning the densenet-121 model pretrained on the Imagenet dataset.

- Developed a Tensorflow based deep learning model for performing bone suppression on single energy chest X-Ray images, which involved experimenting with various architectures including UNets, DenseNets and Conditional-GANs.

Projects

Ultrasound Image Segmentation and Classification of Thyroid Nodules
Jan-May 2018

- Worked on detecting and characterizing thyroid nodules from ultrasound images using the TI-RADS ultrasound features.

- Developed image segmentation models for the task using architectures like U-Nets, densenets, and dilated convolutions and achieved an average dice coefficient of 85%.

- Done in collaboration with Dr. Anthony Samir of the MGH/MIT Center for Ultrasound Research and Translation (CURT) lab at the Massachusetts General Hospital (MGH), Boston.

Genetic Mutation Classification using Natural Language Processing for Cancer Treatment
Sept-Dec 2017

- Developed a multi-class classifier to predict 9 different cancer types of genetic mutations using text based clinical evidence, which is in the form of relevant conference papers.

- Employed Natural Language Processing techniques like Word2Vec, Doc2Vec, etc., for training word embeddings and deep learning techniques like 1D CNNs, LSTMs, etc for classification, and achieved an accuracy of 46% and a multi class log loss of 1.56.

Medication Recommendation System using Reinforcement Learning
Sept-Dec 2017

- Developed a recommendation system for backpain medication using a weighted directional graph of relations between multiple causes, effects and medications, with the objective of recommending an treatment plan to a patient with some prior conditions such that the quality of life and pain of the patient are optimized, in the least time possible.

- Modeled the graph as a Markov decision process and used reinforcement learning techniques like SARSA and Q-Learning for predicting optimal medication and achieved an optimal mean undiscounted return within an average of just 2 time steps.

Programming Skills

Computer Languages:	C, C++, Java
Scripting Langauages:	Python, MATLAB, R
Library Familiarity:	Tensorflow, PyTorch, Keras, Scikit, OpenCV
Database Familiarity:	SQL