VISHAL SUNDER

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EDUCATION

PhD in Computer Science *August 2019 - Present*
The Ohio State University *Overall CPI: 3.70/4.00*

Bachelor of Technology in Electrical Engineering *May 2016*
Indian Institute of Technology, Banaras Hindu University (IIT-BHU) *Overall CPI: 8.35/10*

All India Senior School Certificate Examination, CBSE India *May 2011*
Mahatma Hansraj Modern School (Intermediate) *Cumulative Marks: 87.8%*

PROFESSIONAL EXPERIENCE

Researcher, Deep Learning and Artificial Intelligence group *July 2016 - July 2019*
TCS Research, New Delhi, India

RESEARCH INTERESTS

Machine Learning, Reinforcement Learning and Natural Language Processing

PUBLICATIONS

G. Gupta,**V. Sunder**, R. Prasad, G. Shroff: *CRESA: A Deep Learning Approach to Competing Risk Recurrent Event Survival Analysis*; Proceedings of the 23rd Pacific-Asia Conference on Knowledge Discovery and Data Mining ***PAKDD-2019***.

V. Sunder, L. Vig, A. Chatterjee, G. Shroff: *Prosocial or Selfish? Agents with different behaviors for Contract Negotiation using Reinforcement Learning*; Proceedings of the 11th International Workshop on Automated Negotiations held in conjunction with ***IJCAI/ECAI 2018***.

V. Sunder, M. Yadav, L. Vig, G. Shroff: *Information Bottleneck Inspired Method for Chat Text Segmentation*; Proceedings of the Eighth International Joint Conference on Natural Language Processing (***IJCNLP 2017***), pages 194-203.

SELECTED RESEARCH PROJECTS

Agents with different behaviors for Contract Negotiation using Reinforcement Learning
Sept 2017 - March 2018
Mentors: Dr. Lovekesh Vig and Dr. Arnab Chatterjee (TCS Research, New Delhi)

- Trained Deep Learning agents capable of negotiating on a set of clauses in a contract agreement using a simple communication protocol using reinforcement learning.
- Modeled selfish and prosocial behavior to varying degrees in these agents and also trained a Meta agent with an ensemble of these behaviors.
- Results demonstrated that the agents are able to hold their own against human players and that the meta agent is able to reasonably emulate human behavior.

Information Bottleneck Inspired Method For Chat Text Segmentation Sept 2016 - March 2017
Mentors: Dr. Lovekesh Vig and Dr. Gautam Shroff (TCS Research, New Delhi)

- Developed a novel technique for segmenting chat conversations using the Information Bottleneck method, augmented with sequential continuity constraints.
- Utilized critical non-textual clues such as time between two consecutive posts and people mentions within the posts for effective segmentation.
- Experiments demonstrated that our proposed method yields an absolute (relative) improvement of as high as 3.23% (11.25%).

UNDERGRAD PROJECT WORK

A package to implement Mason's Gain Formula
Mentor: Dr Gopal Sharma (Dept. of Electrical Engg., IIT-BHU)

- Developed a robust algorithm to implement Mason's Gain Formula for finding the transfer function of a linear signal flow graph.
- Implemented the algorithm in C++ and developed a package for the same.
- This project was funded by the Design and Innovation Hub (DIH), IIT-BHU.

Face Recognition using Principal Component Analysis (PCA) and Neural Network
Mentor: Dr. Sanjay Kumar Singh (Dept. of Computer Science and Engg., IIT-BHU)

- Obtained reduced set of features for a face image by applying PCA on a set of training images from the ORL face dataset.
- Trained a 2 layer neural network using the reduced set of features as input to predict the identity of a face. Used Matlab for implementation.
- Successfully classified 40 subjects achieving an accuracy of 97.5%.

ACHIEVEMENTS

Secured a spot in the semi finals (top 10) among 500 participants in the competition *CIKM AnalytiCup 2017 - Lazada Product Title Quality Challenge* which was a data challenge held under CIKM 2017. Link

Secured a position in top *0.2%* amongst *150,000 (approx)* candidates in UPTU-SEE 2012.

Secured a position in top *0.7%* amongst *1,200,000 (approx)* candidates in AIEEE 2012.

Secured a position in top *0.4%* amongst *600,000 (approx)* candidates in IIT-JEE 2012.

TECHNICAL STRENGTHS

C, C++, MATLAB, Python, Keras, Pytorch, Tensorflow, LaTeX, Linux

RELEVANT COURSES

Computer Science: EE-3105 Algorithms and Data Structures, EE-3203 Computer Systems, AM-1103 Computer Programming and Graphics, AM-1301 Computer Programming Lab, EE-4115 Artificial Intelligence and Expert Systems.
Mathematics: AM-1101 Mathematics I (Calculus), AM-1202 Mathematics II (Linear Algebra), AM-2204A Numerical Methods, EE-2204 Optimization Techniques.