

SHIVANSH RAO

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EDUCATION

Pennsylvania State University

Masters of Science, Informatics | CGPA : 4.0 / 4.0

Coursework: Deep Learning, Computer Vision, Artificial Emotion Recognition, Data Mining

University Park, PA

May 2021

Delhi Technological University

Bachelor of Technology, Electronics & Communication Engineering | CGPA : 8.64 / 10

Coursework: Computer Vision, Machine Learning, Pattern Recognition, Natural Language Processing

New-Delhi, India

May 2019

PROFESSIONAL EXPERIENCE

Google AI - DeepLDB Project

Penn State University | Dr. Lee Giles, Dr. Daniel Kifer

Pennsylvania, USA

September 2019- Ongoing

- Working in the Computer-Vision team on the DeepLDB project that aims to predict the occurrence of a landslide in a region, and is one of the 20 grantees of the Google AI Impact Challenge, 2019. Currently using a 6 Channel U-NET model to segment the landslide regions in the post-landslide images. The model currently has an IOU of 0.68.

Person Re-Identification in Videos

Computer Vision Lab, University of Manitoba | Dr. Yang Wang

Manitoba, Canada

June-August 2018

- Achieved state of the art results by an average margin of +8% for the task of Person Re-Identification that helps in identifying the same person from videos captured under different cameras.
- While working as a Research Scholar, I implemented a non-local attention model that calculates the attention scores in a global manner by considering all the frames in a video and hence extracts efficient long-range dependencies.

Task-oriented language visual grounding

Computer Vision Lab, IIT-Kanpur | Dr. Vinay Namboodiri

Kanpur, India

December 2017-March 2018

- Worked as a student research associate on a visual grounding project which helps an autonomous agent to extract semantically meaningful representations of language and map it to the visual elements and actions in the environment.
- My main contributions was to incorporate the stacked attention mechanism into the end-to-end trainable neural architecture which could efficiently combine the text and image representation and then use a policy to execute the natural language instruction.

PUBLICATIONS

- Estimating Uncertainty in Landslide Segmentation Models*: Shivansh Rao, Vikas Kumar, Savinay Nagendra, Te Pei, Tong Qiu, Lee Giles, Daniel Kifer, Chaopeng Shen, (CVPRW-2020) (Submitted).
- Neural Machine Translation for Low-Resourced Indian Languages*: Himsndhu Choudhury, Shivansh Rao, Rajesh Rohilla; *Language Resources and Evaluation Conference, (LREC-2020) France*.
- Design of Hanman Entropy Network from RBFN*: Madasu Hanmandlu, Shivansh Rao, Shantaram Vasikarla; *Journal of Modern Physics Vol.10 No.13 (2019)*.
- Non-Local Attentive Temporal Network for Person Re-Identification*: Shivansh Rao, Peng Cao, Tanzila Rahman, Mrigank Rochan, Yang Wang; 16th IEEE International Conference on Advanced Video Signal-based Surveillance (AVSS-2019), Taiwan.

PROJECTS

Facial Expression Recognition with Videos

Penn State University | Dr. James Wang

Feb 2020 - Ongoing

- Working on frame-level attention mechanism for classifying a video in the wild to Valence/Arousal emotions from AFEW 8.0 dataset. Currently combining Visual features (AFEW) with Physiological features from a new dataset (PAFEW) to perform efficient expression recognition.

Radial basis function networks (RBFN)

Indian Institute of Technology, Delhi | Dr. Madasu Hanmandlu

March-November 2017

- Improved the performance of RBFN on classification tasks by learning its internal parameters with a new evolutionary method called *Jaya*, which is bereft of algorithm-specific parameters unlike other traditional algorithms.
- I further used the concept of information set theory to build a network that responds both to the pattern and to the uncertainty associated with it whereas the RBFN network simply responded to the pattern in the input vector.

SKILLS

Programming Languages: C++, Python, C, MATLAB.

Tools: PyTorch, Tensorflow, Keras, Numpy, Pandas, Scipy, Matplotlib, Jupyter, OpenCV, Scikit Learn, L^AT_EX, GIT.