Hitesh Ulhas Vaidya

Website: people.rit.edu/hv8322/
Email: hv8322@rit.edu
LinkedIn: hiteshuv
GitHub: hiteshvaidya

Education

Rochester Institute of Technology — Rochester, NY
M.S., Computer Science, GPA: 3.4/4.0 — 2018–2021

- Thesis: "Self-Organizing Neural System for Lifelong Machine Learning"
- Advisor: Dr. Alexander Ororbia

University of Mumbai — Mumbai, India
B.E., Computer Engineering, GPA: 7.37/10.00 — 2013–2017

- Project: "Compression of Deep Neural Networks"
- Advisor: Prof. Avinash Shrivas

Research Experience

Rochester Institute of Technology — Rochester, NY
Research Assistant, Software Design and Productivity Laboratory — November 2020 - Current

- Examining efficacy of different temporal networks to find software vulnerabilities through Abstract Syntax Trees
- Tackling security threats on stackoverflow dataset by using BERT

Rochester Institute of Technology — Rochester, NY
Summer Intern, Machine and Neuromorphic Perception Laboratory (kLab) — May 2019 - August 2019

- Introduced a new streaming video dataset containing 51 classes which is bigger than all other existing ones
- Automated data preprocessing by curating other video datasets for image classification and conducted object tracking experiments

Rochester Institute of Technology — Rochester, NY
Research Assistant, Dr. Roger Chen — September 2018 - December 2018

- Predicted optimal locations for cab placement thus reducing customer waiting time by performing density estimation
- Extracted customer statistics like user's length of journey, number of vehicle transition points etc. by implementing linear regression
- Discovered correlation between consumer types and their travel pattern as a result of data analysis

Indian Institute of Technology, Bombay — Mumbai, India
Research Intern, Dr. Ganesh Ramakrishnan — August 2017 - May 2018

- Introduced first ever corpus/dataset for English to Hindi Neural Machine Translation of size 1.7M
- Performed experiments using LSTM neural network and achieved 85% accuracy (better than most models present then)
- Facilitated research and experiments on OCR system for Devanagari script by executing data preprocessing and building data pipeline

Publications

[1] R. Roady, T. L. Hayes, H. Vaidya, and C. Kanan, "Stream-51: Streaming classification and novelty detection from videos", in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Jun. 2020.

Thesis

- A Self-Organizing Neural System for Lifelong Machine Learning
  Developing Neural Networks that would have low catastrophic forgetting for multiple tasks received in streaming manner

Teaching Experience

- CSCI 736: Neural Networks and Machine Learning Spring 2020
  Teaching Assistant
  Designed new home works and projects for 35 graduate students. Further, graded them and guided students in development of their projects.
- CSCI 635: Introduction to Machine Learning Fall 2020
  Teaching Assistant
  Conducted office hours for this graduate course to coach them on topics taught in this course. Additionally, evaluated students' home works and projects.

Skills

- **Programming:** Python, Java, C++, SQL, HTML5, CSS3, Latex
- **Software/Frameworks:** Tensorflow, PyTorch, Keras, Pandas, Scikit-learn, NLTK, Docker
- **Cloud Services:** Google Colab, Microsoft Azure

Projects

Style transfer of facial makeup May 2020 - May 2020
Tensorflow, Python

- Performed a comparative study of performance of approaches like HOG, Cycle-GAN and other generative models
- Remodeled use of Spatial Profile Loss for style transfer as proposed by Sarfraz, M. S. et al. '19

Neuro-cognitive Neural Networks with episodic memory Feb 2020 - May 2020
Tensorflow, Python

- Conceptualized that selective retraining of connections can improve stability and learning of Neural Networks
- Overcame the challenge of developing data loaders in tensorflow2.0 for custom labeled split-MNIST dataset
- Displayed performance improvement using proposed method over traditional neural network training methods

Empirical Study on benchmarks for lifelong learning based classification Sep 2019 - Dec 2019
Tensorflow, Python

- Examined catastrophic forgetting in Feed Forward Neural Networks (FFNs) on MNIST dataset
- Demonstrated that data ordering has an effect on learning curves of FFNs using metrics like Backward/Forward Transfer
- Backed this study with CNN implemented on Caltech-256 dataset

Visual Question Answering on images Nov 2019 - Dec 2019
PyTorch, Python

- Built a system that given an image, answers questions asked about it, example, Which fruit is there in the image?
- Revamped the 'Karpathy' train/val split for MS COCO '17 dataset. Used it to train a new combination of CNN and RNN

Extracurricular Activities

- Member at RIT Indy Autonomous Challenge May 2020–August 2020
  Member of RIT's official team competing in this Autonomous driving challenge. Constructed automatic speed detection module using flow networks.
- Member at Badminton Club 2019–2020