

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 Shrivastava

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

REFERENCES

- **Dr. Alexander G. Ororbia II:** Assistant Professor, Rochester Institute of Technology, New York. Email: ago@cs.rit.edu
- **Dr. Ifeoma Nwogu:** Assistant Professor, Rochester Institute of Technology, New York. Email: nwogu@cs.rit.edu
- **Dr. Nathan Cahill:** Associate Professor, Rochester Institute of Technology, New York. Email: ndcsma@cs.rit.edu
- **Dr. Mehdi Mirakhorli:** Associate Professor, Rochester Institute of Technology, New York. Email: mxmvse@rit.edu