PARTH DODHIA

pdudeia.github.io | pdodhia@stanford.edu | +1 650-460-4021

Education

Stanford University — **Stanford, CA**
MS in Electrical Engineering — 2022-present

Indian Institute of Technology (IIT), Bombay — **Mumbai, India**
B. Tech (Honors) in Electrical Engineering, GPA : 9.83/10 — 2018-2022

- **Institute Silver Medal**, Minor in Computer Science and Engineering

Technical Skills

- **Languages :** C++, Python, MATLAB, VHDL, HTML, LaTeX
- **Softwares :** PyTorch, Tensorflow, Pandas, Keil μVision, Scilab, Quartus, Eagle, XCircuit

Internships

Samsung Electronics, AI-Big Data Lab | *Suwon, South Korea* — Jun '21-Jul '21

- Extended CartoonGAN and AnimeGAN TensorFlow models for cartoon stylization of images with minimal train data
- Proposed the use of Differentiable Data Augmentation, and ideated cartoon stylization with different artist styles as a Transfer Learning task to slash previous train set size by 90%

Indian School of Business, Center for Analytical Finance | *Hyderabad, India* — Apr '20-May'20

- Created a word classifier to identify climate-related words for analyzing company 10K reports
- Fine-tuned GloVe vectors on IPCC climate reports using hyperopt to tune hyper-parameters, and used K-means clustering on obtained word-vectors to create an unsupervised climate-word classification dataset
- Implemented PyTorch bi-directional LSTM word-classifier using weighted cross-entropy loss to tackle class imbalance

Research Projects

Contractive Stochastic Approximation [Stochastic Systems] — **Aug '21-present**

Mentor : *Prof. Vivek Borkar* | *IIT Bombay*

- Derived a tail-error concentration bound for contractive stochastic approximation with Martingale difference and Markov noise, and applied it to RL algorithms like asynchronous Q-learning
- Extending it to Q-learning on POMDPs by learning environment dynamics from observations in an offline setting, using encoder-decoder neural networks with agent states as latent variables

Adaptive Frank-Wolfe algorithm — **Dec '20-Mar '22**

Mentor : *Tavor Baharav, Prof. Mert Pilanci* | *Stanford University*

- Application of adaptive algorithms in Franke-Wolfe optimization for Lasso regression on large datasets
- Simulated Sequential Halving, LUCB and successive elimination algorithms in a fixed budget and fixed confidence settings on synthetic data and observed orders of magnitude of computational gains from the exact method

Automated Gleason Grading — **Mar '20-May'20**

Mentor : *Prof. Amit Sethi* | *IIT Bombay*

- Developed PyTorch semantic segmentation models to identify severity of prostate cancer in tissue images
- Parallelized pre-processing and training using DataLoaders for fast switch from multi-class to one-vs-all models
- Trained symmetric UNets with pre-trained encoders using Soft Dice and Focal losses to handle class imbalance

Scholastic Achievements and Mentorship

- **Prof. K.C. Mukherjee Award** for best B. Tech project among Electrical Engineering undergraduates
- Awarded 5 AP (Advanced Performer) grades including Markov Chains and Queuing Systems and Differential Equations
- Guided freshmen and sophomore students to help them excel in academics and thrive in the institute as a student mentor at IIT Bombay
- Teaching Assistant for CS 101 : Computer Programming and Utilization at IIT Bombay and volunteering instructor for SHALA 2020 (Machine Learning online course)