

CHINMAY TALEGAONKAR

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EDUCATION

University of California Los Angeles (UCLA)

2019-21

Los Angeles

- Masters in Electrical and Computer Engineering specializing in *Signals and Systems*
- Research Advisor: [Prof. Achuta Kadambi](#)

Indian Institute of Technology (IIT) Bombay

2015-19

Mumbai

- B.Tech. in Electrical Engineering with a *Minor* in Computer Science, **GPA: 9.07/10**

PUBLICATIONS

- C. Talegaonkar, A. Rajwade, **Performance Bounds For Tractable Poisson Denoisers With Principled Parameter Tuning** *IEEE GlobalSIP 2018* [[Paper](#)]
- C. Talegaonkar, P. Khirwadkar, A. Rajwade, **Compressive Phase Retrieval under Poisson Noise**, *IEEE ICIP 2019* [[Paper](#)]

TECHNICAL SKILLS

- C++, MATLAB, Python, Bash
- PyTorch, CUDA, Git, OpenCV, VHDL

KEY COURSES

- Advanced Machine Learning, Probability and Random Processes, Linear Algebra, Optimization Techniques, Reinforcement Learning
- Signal and Image Processing, Communications, Advanced Image Processing, Medical Imaging, Estimation and Identification
- Data Structures, Operating Systems

SCHOLASTIC ACHIEVEMENTS

- 10th International Junior Science Olympiad, 2013 | **Silver Medal** | 250 participants from over 40 nations
- South East Asia Machine Learning (SEAML) summer school 2019 | 100/1100 applicants selected
- All India Rank 9 | KVPY 2014 | Over 50000 candidates | Test of basic sciences and research

EXPERIENCE

ROTATION GRADUATE STUDENT

Prof. Achuta Kadambi

May 2019 – Present

Visual Machines Group, UCLA

- Investigating **deep learning** methods to discover the underlying **physics phenomena** governing a data generation process
- Combined an **auto-encoder** based approach *SciNet* with **Genetic programming** to find accurate **semantic expressions** for a damped pendulum using only time-series data as input
- Currently focusing on **representation learning** approaches to generate representations spaces for physics expressions using data to model structural and semantic correlations between the same.

AI/ML COMPUTE DEVTECH INTERN

NVIDIA

May 2018 – July 2018

Bangalore, India

- Developed CUDA kernels for optimizing the routing layer back-propagation in **capsule networks**
- Achieved a cumulative speed-up of **2x** by adding support for **mixed-precision** training
- Parallelized end-to-end implementation of **DBscan** (clustering algorithm) for **NVIDIA Rapids** library

REMOTE RESEARCH INTERN

Prof. Dirk Kroese

May 2017 – July 2017

University of Queensland, Australia

- Devised a data-parallel implementation of **Cross Entropy** optimization using **CUDA**
- Maximized a peak detector function using CE optimization with a speed up of **3000x** w.r.t. a CPU

KEY PROJECTS

Photometric Stereo using Fully Convolutional Networks

- Implemented a deep learning based approach for **Photometric Stereo**. Evaluated its performance on the DiLiGenT dataset.
- Introduced stochasticity to the cosine loss function and added **dilated convolutions** to the existing architecture. Code [here](#)
- Observed loss in performance with the stochastic loss function, and a marginal improvement using dilated convolutions.

Single Image Super Resolution for Medical Imaging

- Used a **sparse** linear representation based approach for joint **denoising** and **super resolution** of medical images.
- Obtained improvements over bi-cubic interpolation for noisy input images. Code [here](#)

Multi-Agent Game Play using Reinforcement Learning

- The project involved training an agent for playing against other agents in the **Pommerman** gaming environment.
- Trained the agent using **Deep Q learning from demonstrations (DQfD)** which allowed it to learn strategies played by an efficient rule based agent and then improve upon them.
- Report [here](#) and video [here](#)