# CHINMAY TALEGAONKAR

**Incoming Masters Student at UCLA**

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## EXPERIENCE

### Scientific Collaborator

**Visual Machines Group, UCLA**

May 2019 – Present  Los Angeles, California

- Currently focusing on analysis of Physics based Deep Learning

### AI/ML COMPUTE DEVTECH INTERN

**NVIDIA**

May 2018 – July 2018  Bangalore, India

- Developed CUDA kernels for optimizing the routing layer backward propagation implementation
- Achieved a cumulative speed-up of 2x by adding support for mixed-precision training
- Parallelized the end-to-end implementation of DBscan, a widely used non-linear clustering method

### REMOTE RESEARCH INTERNSHIP

**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

## 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 a 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

**Gridless Estimation of Saturated Signals**

- Compared the performance of atomic norm minimization and a compressed sensing formulation for recovering a signal composed of decaying sinusoidals from noiseless clipped measurements. Report 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

## EDUCATION

### B.Tech (Electrical Engineering)

**Indian Institute of Technology (IIT) Bombay**

2019  Mumbai

- GPA: 9.07/10
- Minor in Computer Science

## PUBLICATIONS

- C. Talegaonkar, A. Rajwade, "Performance Bounds For Tractable Poisson Denoisers With Principled Parameter Tuning", in the $6^{th}$ IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2018
- C. Talegaonkar, P. Khirwadkar, A. Rajwade, "Compressive Phase Retrieval under Poisson Noise", in the $26^{th}$ IEEE International Conference on Image Processing (ICIP) 2019

## TECHNICAL SKILLS

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

## KEY COURSES

- Machine Learning, Probability and random processes, Linear Algebra, Optimization Techniques, Reinforcement Learning
- Signal and Image Processing, Communications, Advanced Image Processing, Medical Imaging
- Data Structures and Algorithms, Operating Systems

## SCHOLASTIC ACHIEVEMENTS

- $10^{th}$ 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