

Bhushan B. Sonawane

bhushansonawane.com

Email: bhushansonawane94@gmail.com

Mobile: +1 (631) 590 9644

EDUCATION

- **SUNY StonyBrook University** StonyBrook, NY
Master of Science in Computer Science; GPA: 3.67/4 May 2019
 - **Thesis:** Lighting Estimation of faces using deep learning; Advisor: Professor Dimitris Samaras;
 - **Research Lab:** Computer Vision Lab
 - **Courses:** Machine Learning, Convex Optimization, Prob and Stats, Artificial Intelligence, Analysis of Algorithm
- **Vishwakarma Institute of Technology** Pune, India
Bachelor of Technology in Computer Engineering; GPA: 9.27/10 May 2015

EXPERIENCE

- Nvidia** Santa Clara, CA
Intern, SPIR-V/GLSL Compiler May 2018 - Current
- **Compiler Knobs Infrastructure:** Implemented Knobs infrastructure to allow compiler debugging[C++, LLVM]
 - **Compiler Phase Dispatcher:** Implemented Compiler phase ordering and parameter tuning framework for machine learning based tool to explore compile time and run time improvements of compiler [C++, LLVM]
- Nvidia** Pune, India
System Software Engineer, Compiler Jun 2015 - Jul 2017
- **Optimizing compiler:** Worked on Nvidia Tegra graphics and CUDA compute compiler; Improved peephole optimizations; OpenGL/DX driver interfaces; Optimization for compile time improvements; Developed Profiling infrastructure; Worked on Tegra(Android) compiler issues; Worked on Coverity, GCov; [C/C++]
 - **Assembler:** Implemented DWARF 2.0 compliant debug frame support for CUDA 9.0. [C]
- Nvidia** Pune, India
Intern, Compiler Jun 2014 - Apr 2015
- **PBQP based Register Allocator:** Implemented Partitioned Boolean Quadratic Problem based register allocator for Nvidia compiler; 98% of existing tests improved (graphics and compute tests); [C++]

OPEN-SOURCE

- **PyTorch:** Contributed to various feature requests and misc bug fixing [Python]
- **Logical Vision:** Polygon Detection; Implemented KNN using ml-pack. [Prolog, C++, Python, OpenCV]

PROJECTS

- **Lighting estimation for faces:** Used domain adaptation for lighting estimation of real face images; Implemented GANs to map real image latent space into synthetic image space; Used Spherical Harmonics(SH) for modelling lighting; Experimented with autoencoder to denoise noisy SH; and train only one neural network; **Report** [Python, PyTorch]
- **Co-Operative GANs:** Train multiple generators during generator training and copy weights of best performing to other generators. This solves mode collapsing, saddle point and local minima problem in training. [Python, PyTorch]
- **ADMM Optimizer in PyTorch:** Implemented ADMM Lasso and Ridge regression in PyTorch and tested on toy dataset; Outperformed Scikit-Learn's state of the art Lasso and Ridge solver; **Report** [Python, PyTorch]
- **Visual Domain Adaptation Challenge:** Working on domain adaptation challenge on CodaLab; Training on synthetic data and classifying corresponding real images; [Python, PyTorch, Ongoing]
- **NIPS 2018: AI for prosthetics:** Using Deep RL to model human with a prosthetic leg to walk and run [Python, PyTorch, Ongoing]
- **Machine Learning Algorithms:** Implemented Ridge Regression, Lasso Solver, Support Vector Machine using Stochastic Gradient Descent and Quadratic Programming. [Python, Matlab]
- **SmartOFF - Managing power supply of appliances for energy conservation:** Home appliances consumes significant power in stand by mode; Internet of Things and Machine Learning solution; LSTM model to understand and predict appliances' usage pattern and control power supply accordingly. [Python, Scikit-learn, Tensorflow, Keras]

SKILLS

- C++, C, Python, Java, Groovy, Matlab, Prolog, PyTorch, Tensorflow, Keras, LLVM, Django, Grails, Android