

Bhushan B. Sonawane

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EDUCATION

- **SUNY StonyBrook University** StonyBrook, NY
 - *Master of Science in Computer Science; GPA: 3.57/4* *Aug 2017 - May 2019*
 - **Thesis:** Solving Lighting Estimation problem using deep learning; Advisor: Professor Dimitris Samaras;
 - **Courses:** Machine Learning, Convex Optimization, Introduction to Computer Vision, Natural Language Processing, Probability and Statistics, Artificial Intelligence
 - **Senior Research Assistant:** Converting high-resolution medical images into tiled-tiff format [C]
- **Vishwakarma Institute of Technology** Pune, India
 - *Bachelor of Technology in Computer Engineering; GPA: 9.27/10* *Aug 2011 - May 2015*

PROJECTS

- **Deep Learning for facial Lighting estimation:** Implemented GANs for domain adaptation to map real images latent space into synthetic image space; Enhanced SIRFS _fast implementation; **Report, Source;** [Python, PyTorch]
- **Co-Operative GANs:** Train multiple generators and copy weights of best performing to other generators every epoch. This solves mode collapsing, saddle point and local minima problem in training; **Source;** [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, Source;** [Python, PyTorch]
- **ML Algorithms:** Implemented Ridge Regression, Lasso Solver, Support Vector Machine using Stochastic Gradient Descent and Quadratic Programming; Human Action recognition using CNN and RNN **Source;** [Python, Matlab]
- **SmartOFF - Automate power supply of home appliances:** IoT and ML solution; LSTM model for predicting appliances' usage pattern and control power supply accordingly. **Report, Source;** [Python, Scikit-learn, Keras]
- **Competitions:** Working on Visual Domain Adaptation, NIPS: AI for Prosthetics and University Rover Challenge

OPEN-SOURCE

- **PyTorch:** torch.isInf, isFinite; Negative indices with torch.narrow; Keys from load state; **Status** [Python, C++]

EXPERIENCE

- **Nvidia** (*Intern, SPIR-V/GLSL Compiler*) *May 2018 - Current*
 - **Knobs Infrastructure:** Knobs infrastructure to allow compiler debugging and experimentation [C++, LLVM]
 - **Phase Dispatcher for Reinforcement Learning based tool:** Compiler phase ordering and parameter tuning framework to enable compile time and run time performance exploration for compiler [C++, LLVM]
- **Nvidia** (*System Software Engineer, Optimizing 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, Nintendo) compiler issues; Worked on Coverity, GCov; [C/C++]
 - **Assembler:** Implemented DWARF 2.0 compliant debug frame support for CUDA 9.0. [C]
- **Nvidia** (*Intern, Optimizing 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++]
- **Startup** (*Technology and Management Role*) *Jan 2014 - Mar 2015*
 - **MetroMidnight:** Food delivery startup, **QuodeIT:** Programming screening platform

SKILLS

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

AWARDS

- **Project:** PBQP based register allocator project secured first place among 126 projects at VIT, Pune
- **Competitive Programming:** 2nd in Kaggle Competition for Human Activity Recognition; Won programming contest(C-Athlon) (> 600 contestants); Qualified for ACM ICPC Amritapuri regionals