Bhushan B. Sonawane

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Education

- **SUNY StonyBrook University** — StonyBrook, NY
  Master of Science(Thesis) in Computer Science — *May 2019*
  - **Courses**: Artificial Intelligence, Smart Energy, Analysis of Algorithm, Machine Learning, Convex Optimization, Probability and Statistics for Data Science
- **Vishwakarma Institute of Technology** — Pune, India
  Bachelor of Technology in Computer Engineering; GPA: 9.27/10.0 — *May 2015*

Experience

- **Nvidia** — Santa Clara, CA
  SPIRV/GLSL Compiler — *May 2018 - Current*
  - **Compiler Knobs Infrastructure**: Implemented Knobs infrastructure to allow compiler debugging and setting optimization parameters
  - **Compiler Phase Dispatcher [C++, LLVM]**: Implemented Compiler Phase ordering and parameter tuning framework for machine learning based framework [C++, LLVM]
- **Nvidia** — Pune, India
  System Software Engineer, Compiler — *Jun 2015 - Jul 2017*
  - **Compile time and memory infrastructure**: Collaborated with OpenGL driver and GLSL Front-end compiler team for implementing Profiling infrastructure; It helps find high compile time issues on Tegra devices(GL content) and DirectX content on desktop; Actively used across driver and compiler teams for Tegra content analysis; Found deprecated heuristics in register allocator and phases within scheduler using this infrastructure. [C++]
  - **Early copy propagation**: Phase ordering of copy propagation; Collaborated with custom driver team for Nvidia customer. Reduced number of instructions processed by optimizer; Improved compile time from few hours to few minutes for specialized shaders; Significant compile time savings observed for customer's specialized shaders (e.g. 90 minutes to 3 minutes) [C++]
  - **Assembler**: Implemented DWARF 2.0 compliant debug frame support for CUDA 9.0; Implemented Vendor specific extensions to support DWARF 3.0 features in DWARF 2.0; Implemented infrastructure ready to go for DWARF 3.0 debug frame support. [C]
  - **Misc**: Implemented/Enhanced various peephole optimizations, interface and heuristic. [C/C++/Python]
- **Vishwakarma Institute of Technology** — Pune, India
  Visiting Instructor — *Jan 2017 - May 2017*
  - **Instructed**: Third year undergraduate course 'Problem Solving and Programming'
- **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++]
    Slides: http://slides.com/bhushansonawane/deck/

Projects

- **Managing power supply of appliances for energy conservation**: Home appliances consumes significant power in stand by mode; Providing Internet of Things and Machine Learning solution; Used LSTM for understanding and predicting appliances' usage pattern and control automatically [Python, Scikit-learn, Tensorflow, Keras]
- **Logical Vision**: Extending Logical Vision framework with statistical machine learning algorithms and deep learning for object detection; Generating images using low-level features such as polygon and triangles. [Python, Prolog, OpenCV]
- **GroupPlay**: Synchronize all devices for audio playback over wifi. [Java]

Programming Skills

- **Languages**: C++, C, Python, Java, Groovy, GLSL, Prolog.
- **Technologies**: Tensorflow, Scikit-learn, Keras, OpenCV, LLVM, Django, Grails, Android, Database, GCov, Coverity.