Bhushan B. Sonawane

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Education

- **SUNY StonyBrook University** — StonyBrook, NY
  Master of Science(Thesis) in Computer Science, Data Science Specialization — *May 2019*
  - **Courses**: Artificial Intelligence, Smart Energy, Analysis of Algorithm, Computing with Logic
- **Vishwakarma Institute of Technology** — Pune, India
  Bachelor of Technology in Computer Engineering; GPA: 9.27/10.0 — *May 2015*

Experience

- **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]
- **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/
- **Vishwakarma Institute of Technology** — Pune, India
  Visiting Instructor — *Jan 2017 - May 2017*
  - **Instructed**: Third year undergraduate course 'Problem Solving and Programming'

Projects

- **Managing power supply of appliances for energy conservation**: Home appliances (combined) consumes lot of power; Providing Internet of Things and Machine Learning solution for this energy waste; Training a neural network to learn appliances' usage pattern and use it for predicting when appliance is not used and can be completely turned off by cutting power supply; Using transfer learning for quickly adapting new home's usage pattern; . [Python]
- **Simulated self driving car**: Using Deep Q-Learning to simulate autonomous car via reinforcement learning; Using Udacity's self-driving-car-sim simulator. [Python]
- **Patient tracking and reporting**: Automatic appointment scheduling and managing; Interface through text and web-app(Grails); Under collaboration of SUNY Binghamton and VIT Pune. [Groovy]
- **Antivirus**: Using MD5 algorithm for detecting malicious, duplicate and comprised files. [Java]
- **GroupPlay**: Synchronize all devices for audio playback over wifi. [Java]

Programming Skills

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

Awards

- **Project**: PBQP based register allocator project secured second place at 'Prakalp: Intra-Department project competition'.