ARJUN MANDAYAM COMAR

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PERSONAL STATEMENT

I hope to obtain full time employment as a software engineer. I'm a long-time supporter of and contributor to free software who wants to change the way we interact with computers, and the world.

SOFTWARE SKILLS

- C, C++, Java, C#, Python, Clojure, Haskell.
- Self-taught programming at age 12.
- OpenCV, OpenGL, GTK+, QT, .NET/4.0.
- Github: www.github.com/arjuncomar

EXPERIENCE

7/13-current **Software Consultant, Self-employed**

- Computer vision consultanting and open source software development. C++/Haskell.

6/12-7/13 **Software Analyst,** *Metron Scientific Solutions*

- Simulation software, software maintenance, plugin development. Java/C++.

6/11-8/11 **Research Intern in Augmented Reality,** *MIT Lincoln Laboratories*

- Augmented a view to provide a 3D visualization of LIDAR data. C/C++.

5/10-8/10 **Intern, University of Chicago Computational Institute**

- Grid multisite capability profiling, experimentally showed performance characteristics of Swift language job scheduler. Java/Python/Swift.

EDUCATION

05/12 **Bachelors in Computer Science,** *Rose-Hulman Institute of Technology*

06/08 **Diploma,** *Downers Grove South High School*

References available on request. Detailed project listing follows.

RECENT MAJOR PROJECTS

2013-2014 **OpenCV Language Interop.**

C++ to C wrapper generator and Haskell bindings.

OpenCV Free Software Project.

- Hooked python module generation to produce C wrappers for C++ API.
- Solved memory access issues.
- Generated Haskell bindings.
- Integrated generation and compilation into OpenCV CMake build system.
- Slated for inclusion into Opencv-Contrib and eventually OpenCV proper.

Summer/Fall 2012 **Electronic Harbor Security Simulator.**

Discrete event simulator to evaluate harbor security system.

Metron Scientific Solutions.

- Re-designed a complex simulator.
- Assumed role as code lead.
- Taught others about DVCS.
- Employed algebraic design for modularity and compositionality.

Academic Year 2011-12 **Augr: Augmented Reality Framework.**

Researched approach to reducing constraints on AR systems.

Senior Research (MIT Lincoln Labs).

- Designed scalable AR framework, for arbitrary space.
- Removed constraints in favor of environment learning and gestural support.
- Built on PTAM/PTAMM algorithm to learn spaces of arbitrary size.
- Divided process into client/server architecture – highly parallelizable system.
- Produced working demo of environmental learning.

Summer 2011 **Augmented Reality Data Visualization.**

Augmenting a view to provide a 3D visualization of LIDAR data.

MIT Lincoln Laboratories.

- Recovered camera pose using black and white marker tiles.
- Augmented view with 3D LIDAR data.
- Displayed data in a natural setting.
- Explored approaches to pose est.
- Planned project for tag-less / marker-less pose estimation.
- Researched modern approaches to pose estimation problem.
- Explored available tech for novel displays such as AR glasses.

Academic Year 2011-12 **Autonomous Vehicle Challenge.**

Consulting for the Rose-Hulman Robotics Team's vision sub-team.

- Taught OpenCV to other students
- Gave talks on SLAM and other important vision algorithms.
- Assisted team writing 3D reconstruction algorithm.
- Lead team meetings, partitioning tasks and assigning roles.
- Coordinated integration of subsystem with whole.

Summer 2010. **Grid Multisite Profiling.**

Swift Scripting Language Scheduler Profiling.

Argonne National Lab and UChicago's Computational Institute.

- Scheduler runs jobs across Open Science Grid and TeraGrid.
- Profiled to prove that jobs are run efficiently in all contexts.
- Coordinated with a team of 4 other students – bugsquashing and reliability.
- Parallelized programs using solid design.
- Changed language design where necessary.
- Proved correctness of scheduler experimentally.