Sathyam Mohanram Vellal

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Seeking Full-Time opportunities from May 2018

Education

University of Southern California, Los Angeles, CA — August 2016 - May 2018 (expected)
Master of Science (M.S.), Computer Science — Focus: Scientific Computing
Relevant Courses: Analysis of Algorithms, 3D Graphics & Rendering, Methods of Computational Physics, Scientific Computing & Visualisation — GPA: 3.38

PES University, Bangalore, India — August 2010 - June 2014
Bachelor of Engineering (B.E.), Computer Science & Engineering — Focus: Parallel Computing, GPA: 3.9

Skills

- **Proficient In**	C/C++, Java, Python, JavaScript, Shell, Linux, Git, LaTeX, Matlab
- **Familiar With**	OpenMP, MPI, Matlab, OpenGL, MySQL, HTML/CSS, ES6, Node.js, React-Native, Android

Work Experience

PayPal Inc., Bangalore, India
Software Engineer (six months as Intern) — Jan 2014 - July 2016

- Worked towards tapering false positives in detection of fraudulent transactions, directly impacting annual revenue (C++).
- Implementation of revamped Next-Gen Payouts Experience/PayPal MassPay (Node.js full-stack).
- Design, implementation and support of the Free Return Shipping activation, and product web experiences (Node.js full-stack).
- Design and implementation of multi-facted Mobile Wallet solutions - Telcel Pay and Claro Pay (React-Native, iOS, Android).

Boost C++ Libraries, (done remotely)
Contract Developer, Google Summer of Code — June 2013 - Aug 2013

- Developed a new aligned memory allocator to perform word-aligned memory allocation and deallocation.
- Modified core functionality of the library to enable auto-vectorisation.
- Implemented efficient BLAS routines, like GotoBLAS Matrix-Matrix multiplication and more, to boost library's performance.

Selected Projects

Agent-Based Simulation for Econophysics, Author — July 2017

- Analysed the role and usage of agent-based modelling in Economics.
- Applied Kinetic Theory of Gases and Molecular Dynamics to implement an agent-based, simple wealth exchange model.
- Also extended the model to support a kinetic wealth exchange model with savings.

Distributed Map Search, Author — May 2017

- Implemented distributed A* and Overlay-method to find a route between two nodes in a large dataset.
- Optimised code for easier recognition of auto-vectorisation and auto-parallelisation of code, boosting performance.

Procedural Music Generation, Co-Author — April 2017

- Used a Recurrent Neural Network to generate music samples for an FPS-game, in MIDI format.
- Fused the different samples, and modified the generated notes based on game parameters to suit the environment and gameplay.

Logic Inference Engine, Author — Nov 2016

- Built an inference engine based on first-order logic, to take in a set of rules/sentences as input, and breakdown the rules to build a Knowledge Base, which then can be queried with sentences for truths in that world.
- The inference engine, at first, simplifies every rule into CNF and uses the resolution by refutation algorithm.

Smart Personal Assistant, Co-Author — May 2014

- Developed a self-learning intelligent mobile assistant to assist users with common-tasks in day-to-day activities.
- The assistant detected and prioritised important SMS and Emails, by accommodating to user's schedule.
- It also featured "Smart Alarms", to find best possible time to set alarms based on the user's calendar and sleep time.

PyOMP, Co-Author — Dec 2013

- Using decorators, introduced OpenMP-like directives for Python, to provide for a simpler parallel programming interface.
- Implemented $Parallel$, $Single$, $Task$, For and $Section$ directives of OpenMP, along with specifying no. of threads.
- Using benchmarks with standard algorithms, measured performance and found it to be promising at significantly large inputs.