Sathyam Mohanram Vellal

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Passionate, meticulous, generalist-specialist seeking full-time opportunities

Education

University of Southern California, Los Angeles, CA — Aug 2016 - May 2018 (expected)
Master of Science (M.S.), Computer Science (High Performance Computing & Simulations) — GPA: 3.38 / 4.00
Relevant Courses: Methods of Computational Physics
Scientific Computing & Visualisation, 3D Graphics & Rendering:

PES University, Bengaluru, India — Aug 2010 - Jun 2014
Bachelor of Engineering (B.E.), Computer Science & Engineering — GPA: 8.85 / 10.00

Skills

- **Programming** C/C++, Java, Python, JavaScript, Shell, Matlab
- **Computer Graphics** OpenGL, CUDA, OpenCL, Rendering, Shading, GPGPU
- **Applied Computer Science** Molecular Dynamics, Fluid-Dynamics, Generative Music, Cellular Automata, Linear Algebra
- **Others** HTML/CSS, Node.js, React/React-Native, iOS, Android, Git, SVN, documentation tools

Work Experience

PayPal Inc., Bangalore, India
Software Engineer — Jan 2014 - Jul 2016

- Reduced detection of false positives in fraudulent transactions in the risk models, directly impacting annual revenue.
- Designed and developed 2nd-gen Payouts experience, in-house Free Return Shipping activation and product experiences, multi-faceted white-labeled mobile-wallet solutions (Telcel Pay and Claro Pay). Resolved and supported issues on the go.
- Awarded for being proactive, work, and mentoring. Was part of winning teams for multiple product hackathons, globally and locally.

Boost C++ Libraries, Remote
Contract Developer, Google Summer of Code — Jun 2013 - Aug 2013

- Developed new aligned allocator, extending `std::allocator` that is guaranteed to allocate on word-aligned memory addresses.
- Modified and restructured core parts of the library for better auto-vectorisation by the compiler, and hence boost performance.
- Modified and implemented better and more efficient BLAS routines to improve the overall performance of the library.

Projects

Simulations and Econophysics — Jun 2017 - Aug 2017

- Analysed and examined role of agent-based modelling, molecular dynamics and kinetic theory of gases in the field of Economics.
- Implemented kinetic wealth-exchange model, with and without savings, to simulate a simple economy for sizeable number of agents.

Procedural Music Generation — Jan 2017 - Apr 2017

- Developed a Recurrent Neural Network with LSTM using Tensorflow to train large classical MIDI music dataset.
- Generated music for an FPS game, and procedurally modified params (tone, tempo, etc) based on game environment in realtime.

Logic Inference Engine — Oct 2017 - Nov 2017

- Built an inference engine based on first-order logic, to query for truths on a knowledge base built on a set of rules/sentences as input.
- Used conversation and simplification to CNF and resolution by refutation for querying the knowledge base.

PyOMP — Oct 2013 - Dec 2013

- Built a library to provide OpenMP like directives using decoratives for Python, to make for a simpler parallel programming interface.
- Implemented `Parallel`, `Single`, `Task`, `For`, and `Section` directives, along with config like number of threads.

Distributed Map Search — Apr 2017 - May 2017

- Implemented distributed map searching techniques, using A* and Multi-layered Overlay Method to find optimal routes between nodes in a large dataset of Los Angeles's intersections. Designed for dynamic and changing travel-times between two nodes.

Smart Personal Assistant — Jan 2014 - May 2014

- Developed an intelligent mobile assistant for common day-to-day personal activities, like Smart Alarms to automatically set alarms, and Smart Notifications to detect and prioritise user's SMS and Email, based on user's calendar, schedules and preferences.