ALBERT GURAL

http://www.albertgural.com/

agural@caltech.edu | 703.346.2869
MSC #466, Pasadena, CA 91126-0466

Education

California Institute of Technology   **Pasadena, CA**
Electrical Engineering with a minor in Computer Science, GPA: 3.9/4.0   *Oct. 2012 - present*

- **Current Coursework:** Advanced Digital Systems Design, Signal-Processing Systems and Transforms, Discrete Differential Geometry, Computer Graphics, Combinatorial Analysis, Stochastic Processes
- **Past Coursework:** Algorithms, Computing Systems, Functional Programming, Embedded Systems (Intel 80186 Robot and FPGA Oscilloscope), Decidability and Tractability, Feedback and Control Circuits, Semiconductor Devices, Abstract Algebra, Physics through Quantum and Stat Mech
- **Activities:** ACM-ICPC Programming Contest (*2012-14*), Robotics Team (Electronics) (*2012-14*)
- **Awards:** Member of Caltech's top ACM-ICPC team, 3rd place at regionals (*2013*)

Thomas Jefferson High School for Science and Technology   **Alexandria, VA**
Senior Research in Computer Science, GPA: 4.45/4.00   *Sept. 2008 - June 2012*

- **Relevant Coursework:** Microprocessor Electronics, Artificial Intelligence, Single and Multivariable Calculus, Advanced Math Techniques (Linear, Integration, Series Expansions, Distributions, etc.)
- **Activities:** Computer Team (co-captain, *2010-12*), Varsity Math Team, Botball Robotics, Physics Team
- **Awards:** USACO (algorithmic coding, gold division), ACSL (CS topics, 1st place individual, *2010-11*), AIME qualifier (math, *2009-12*), Naval Research Lab (1st place project in CS, *2011*)

Work and Experience

Jane Street Capital, *Software Developer Intern*   *Summer 2014*
- Completed two projects - (1) fault-tolerant distributed lock server to replace NFS locks; (2) plugin support for the internal trader tool as well as a plugin ecosystem for trader developers with version control.
- Used OCaml (especially the Async monad, RPCs, DynLoader).

California Institute of Technology, *CS 38 (Algorithms) Teaching Assistant*   *Spring 2014*
- Conducted weekly office hours to review material; provided lots of intuition for problem solving as well as concrete examples and big picture overviews. Graded assignments.
- Received extremely positive reviews for teaching difficult material in an intuitive and understandable way.

Google (Research Division), *Software Engineering Intern*   *Summer 2013*
- Developed image processing techniques to clean a sequence of object photos to QA specifications, allowing for a much larger class of object image sequences to be processed; currently for Google Shopping.
- Used C++, OpenCV, and the Ceres non-linear solver library.

Naval Research Laboratory, *Intern, High Performance Computing*   *Summer 2011, 2012*
- *Summer 2012:* Built a molecular dynamics simulation in C; compared different integration step algorithms including brute force, linked cell, and monotonic Lagrangian grid.
- *Summer 2011:* Created an MPI (Message Passing Interface) library for parallel operations on a grid in C++, tested on a wave propagation simulation, then analyzed its efficiency.

Skills and Interests

Tools and Languages:
C/C++, Java, OCaml, Haskell, Python, x86 Assembly, LaTeX, Git, some Bash, Mathematica, some Matlab, HTML, CSS, JavaScript, OpenCV, MPI (parallelization platform), many proprietary tools

Hobbies and Interests: Mathematics and Computer Science; Analog and Digital Electronics; Puzzles; Designing, Developing, and Constructing Electronic Devices (mix of EE, CS, and ME)
See website for detailed project descriptions (http://www.albertgural.com/projects/).