Albert Gural

http://www.albertgural.com/

MSC #466 agural@caltech.edu
Pasadena, CA 91126-0466 (703) 346-2869

Education

California Institute of Technology **Pasadena, CA**
Electrical Engineering with Computer Science Minor, GPA: 3.8/4.0 *Oct. 2012 - present*

- **Relevant Coursework:** CS38 - Intro to Algorithms, CS24 - Intro to Computing Systems, CS21 - Decidability and Tractability, CS11 - ACM Competition, EE40 - Semiconductor Sensors and Actuators, APh9 - Solid-State Electronics, Ma5 - Abstract Algebra, Ma2b - Probability and Statistics
- **Activities:** ACM Programming Contest (*2012*), Robotics Team (Electrical) (*2012-13*)
- **Awards:** Top 5 individual in Caltech's ACM team and fastest ACM regional problem solution (*2012*)

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:** AP Computer Science, Artificial Intelligence, Microprocessor Electronics (including Motorola MC6800 Assembly programming), Single and Multivariable Calculus, Advanced Math Techniques with Linear Algebra, Differential Equations, Complex Analysis
- **Activities:** Computer Teams (co-captain, *2010-12*), Varsity Math Team, Botball Robotics, Physics Team
- **Awards:** USACO (1^{st} place average score in silver division, *2010-12*), ACSL (1^{st} place team, *2010*; 1^{st} place individual, *2010-11*), AIME qualifier (*2009-12*), Naval Research Lab (1^{st} place project in CS, *2011*)

Work and Experience

Google Research, *Software Engineering Intern* *Summer 2013*

- Developed image processing techniques using C++, OpenCV, and Ceres non-linear optimizer to clean a sequence of object images to QA specifications
- For Google Shopping; will allow for a much larger class of object image sequences to be processed

Naval Research Laboratory (STEP), *Intern, High Performance Computing* *Summer 2012*

- Built a molecular dynamics simulation in C; looked for an optimum integration step algorithm
- Studied integration methods including brute force, linked cell, and MLG (monotonic Lagrangian grid)

Naval Research Laboratory (SEAP), *Intern, High Performance Computing* *Summer 2011*

- Developed an MPI (Message Passing Interface) library for parallel operations on a grid in C++ and compared against the PETSc (Portable, Extensible Toolkit for Scientific computation) implementation
- Tested both on a wave propagation simulation and produced a research paper and presentation

Innovative Defence Technologies, *Competitor* *Spring 2011*

- Developed automatized software in Java for client/server XML data communication over TCP/IP sockets
- Worked in a team of three; produced code, documentation, samples, and a presentation; won 1^{st} place

Skills and Interests

Programming, Markup, and Web Languages and Libraries:
Proficient: C/C++, Java, Python, LaTeX, HTML, CSS, JavaScript, x86 Assembly, OpenCV
Familiar: Mathematica, Ceres Solver, AVR/Arduino C, PIC & MC6800 Assembly, Fortran, Bash

Hobbies and Interests: Computer Science and Mathematics, Analog and Digital Electronics, Puzzles, Making Electronic Devices (mix of EE, ME, and CS) including planning and designing, Graphical Arts
See website for detailed project descriptions (http://www.albertgural.com/projects/).