Albert Gural

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Education

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

- **Current Coursework:** Intro to Embedded Systems (Altera Cyclone III FPGA Oscilloscope), Electronics Laboratory, Quantum Physics, Ordinary Differential Equations
- **Past Coursework:** Intro to Algorithms, Intro to Computing Systems, Intro to Embedded Systems (Intel 80186 Robotrike), Decidability and Tractability, Semiconductor Devices, Solid-State Electronics (Lab), Abstract Algebra, Probability and Statistics, Complex Analysis, Wave Physics
- **Activities:** ACM-ICPC Programming Contest (*2012-14*), Robotics Team (Electronics - SONAR subsystem) (*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 (including Motorola MC6800 Assembly programming), AP Computer Science, Artificial Intelligence, Single and Multivariable Calculus, Advanced Math Techniques with Linear Algebra, Differential Equations, Complex Analysis
- **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 team, *2010*; 1st place individual, *2010-11*), IDT (programming development, 1st place team, *2011*), AIME qualifier (math, *2009-12*), Naval Research Lab (1st place project in CS, *2011*)

Work and Experience

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 (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 1st place

Skills and Interests

Tools and Languages:
C/C++, Java, Python, HTML, CSS, JavaScript, x86 Assembly, Arduino/AVR C, LaTeX, Git, Mathematica, some Matlab, OpenCV, Ceres non-linear solver, MPI (parallelization platform), some Bash

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/).