

ALBERT GURAL

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MSC #466, Pasadena, CA 91126-0466

Education

California Institute of Technology

Pasadena, CA

Electrical Engineering with a minor in Computer Science, GPA: 3.8/4.0

Oct. 2012 - present

- **Current Coursework:** Intro to Embedded Systems, Circuits and Systems, Wave Physics (first of a three part course in Quantum Physics and Statistical Mechanics), Complex Analysis
- **Past Coursework:** Intro to Algorithms, Intro to Computing Systems, Decidability and Tractability, Semiconductor Devices, Solid-State Electronics (Lab), Abstract Algebra, Probability and Statistics
- **Activities:** ACM Programming Contest (2012), Robotics Team (Electronics) (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:** 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, top average score in silver division, 2010-12), 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, L^AT_EX, 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); Graphical Arts
See website for detailed project descriptions (<http://www.albertgural.com/projects/>).