

# ALBERT GURAL

<http://www.albertgural.com/>

MSC #466

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## Education

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### California Institute of Technology

*Electrical Engineering with Computer Science Minor*

**Pasadena, CA**

*Oct. 2012 - present*

- **GPA:** 3.8/4.0
- **Relevant Coursework:** CS38 - Intro to Algorithms, CS24 - Introduction to Computing Systems, CS21 - Decidability and Tractability, CS11 - ACM Competition class, EE40 - Semiconductor Sensors and Actuators, APh9 - Solid-State Electronics for Integrated Circuits, 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

*Senior Research in Computer Science*

**Alexandria, VA**

*Sept. 2008 - June 2012*

- **GPA:** 4.45/4.00
- **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:** Senior Computer Team (co-captain, 2011-12), Intermediate Computer Team (co-captain, 2010-11), Varsity Math Team, Botball Robotics, Physics Team
- **Awards:** USACO (1<sup>st</sup> place average score in silver division, 2010-12), ACSL (1<sup>st</sup> place team, 2010; 1<sup>st</sup> place individual, 2010-11), AIME qualifier (2009-12), Naval Research Lab (1<sup>st</sup> place project in CS, 2011)

## Work and Experience

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### Google Research, *Software Engineering Intern*

*Summer 2013*

- Developed image processing techniques (C++, OpenCV, Ceres) to clean a sequence of images to QA specs
- For Google Shopping; will allow for a much larger class of object image sequences to be processed

### Naval Research Laboratory, *Intern, High Performance Computing*

*Summer 2011, 2012*

*Summer 2012:*

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

*Summer 2011:*

- Created an MPI library for parallel operations on a grid (C++) and compared against the PETSc library
- Tested both on a wave propagation simulation and produced a research paper and presentation

### Innovative Defence Technologies, *Competitor*

*Spring 2011*

- Developed automatized software (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<sup>st</sup> place

## Skills and Interests

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### Programming, Markup, and Web Languages and Libraries:

*Proficient:* C/C++, Java, Python, L<sup>A</sup>T<sub>E</sub>X, 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/>).