Albert Gural

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Education

California Institute of Technology **Pasadena, CA**
Electrical Engineering with a minor in Computer Science, GPA: 4.0/4.3 *Oct. 2012 - present*

- **Current Coursework:** Quantum Computation, Advanced Digital Systems Design, Machine Learning and Data Mining, Mixed Mode Integrated Circuits Research (with Professor Emami)
- **Past Coursework:** Algorithms, Computing Systems, Embedded Systems (FPGA Oscilloscope), Feedback and Control Circuits, Signal-Processing Systems, Semiconductor Devices, Abstract Algebra, Combinatorial Analysis, Stochastic Processes, Discrete Differential Geometry
- **Activities:** ACM-ICPC Programming Contest (*2012-14*), Robotics Team (Electronics) (*2012-14*)
- **Awards:** ACM-ICPC (3rd place at regionals, *2013*; 4th place at regionals, *2014*)

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

California Institute of Technology, *Teaching Assistant* *Spring 2014, Winter 2015*
CS 38 (Algorithms; Spring 2014) and EE 45 (Electronics Laboratory; Winter 2015)

- Conducted weekly office hours; provided intuition for problem solving as well as concrete examples and big picture overviews. Graded assignments.
- Received 100% positive reviews (many commented on my ability to explain difficult material well).

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).

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, VHDL, x86 Assembly, LaTeX, Mathematica, Git, some Bash, OpenCV, MPI (parallelization platform), Altium, Altera and Xilinx toolchains, many other 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/).