

# Gabriel Alzate

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## EDUCATION

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### Pomona College, Claremont, CA

B.A. in Computer Science, minor in Mathematics; GPA: 3.92 Expected May 2021

Relevant coursework: Fundamentals of Computer Science (SML), Data Structures and Advanced Programming (Java)

### University of California, San Diego, La Jolla, CA

B.S. in Computer Science (Jacobs School of Engineering) Sept 2017 - June 2018

Relevant coursework: Intro to CS (Java), Data Structures and Algorithms (C, C++), Mathematics for Algorithms and Systems Analysis, Discrete Mathematics, Calculus I/II, Intro to Data Science (Python)

## SKILLS

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**Programming Languages:** Proficient in Java, C, C++; Familiar with Bash, Python, HTML, CSS, Javascript

**Software Tools:** Comfortable with UNIX command line, Git, Valgrind, GDB, JDB, vim

**Spoken Languages:** Fluent in English and Tagalog

## PROJECTS

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**“PATH” Travel Efficiency Calculator (Hackathon)** Nov 2018 - Present

- Creates a website that suggests the best travel options based on transportation, price, time, and distance
- Incorporates Google Direction Services and Uber API with UIKit framework to create a responsive website
- Develops the optimization logic & web-crawler in the back-end and the map & radio form in the front-end

**Game Trees Weak-AI** October 2018

- Implemented a k-ary tree to create a computer that plays simple, deterministic games such as tic-tac-toe
- Added weak-AI capabilities such that the computer prunes losing tree branches in  $O(1)$  time

**Markov Chain Monopoly** Sept 2018 - Present

- Adapts the Markov chain to simulated Monopoly games to calculate long-run probability values
- Analyzes Markov matrix and probability values to guide better investment choices

**Seam Carving** August 2018

- Implemented a content-aware resizing algorithm to change image size without destroying proportions
- Enhanced time complexity from  $O(mn^2)$  to  $O(mn + n)$  by implementing dynamic programming

## EXPERIENCE

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**Pomona College HPC Hahn Grant Program, Claremont, CA** Sept 2018 - Present

- Coordinates video tutorials on software tools such as version control, the CLI, and IDEs
- Created a tutorial series demonstrating the uses of Git and GitHub for large-scale projects for developers and non-developers alike

**Computer Science & Engineering Society (CSES) Outreach Chair, La Jolla, CA** Sept 2017 - June 2018

- Tutored introductory computer science topics at a local high school in classes of up to 15 students
- Led a software tools and development environment workshop (Git, dotfiles, UNIX terminal, debugger) for college students in introductory CS courses in groups of 20-30 students
- Gained 17 new members for CSES as a result of the development environment workshop

## CO-CURRICULAR ACTIVITIES

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**Board Member, Violinist, Symphonic Student Association, UC San Diego** Sept 2017 - June 2018

**Vice President, UNESCO HEART, International School of Manila** Sept 2015 - June 2017