

# SHANGWAY HSU

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## EDUCATION

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**University of California, San Diego**  
**B.S. Computer Science, Minor - Cognitive Science**

Expected Graduation: 2018  
Cumulative GPA: 3.66 - Major GPA: 3.86

**Related Coursework:**

CSE 100: Advanced Data Structures and Object-Oriented Design	CSE 20: Discrete Mathematics
CSE 30: Computer Organization and Systems Programming	CSE 21: Mathematics for Algorithms and Systems
CSE 105: Theory of Computability	CSE 101: Design and Analysis of Algorithms

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## SKILLS

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**Proficient in:** Java, Python, HTML/CSS/JavaScript, Unix, Git  
**Working Knowledge:** C, C++, Swift/iOS/Xcode, SQL

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## EXPERIENCE

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**SLAC (Stanford Linear Accelerator Center) National Accelerator Laboratory**  
*Intern*

*Menlo Park, CA*  
Jun 2015 - Aug 2015

- Implemented an optimization algorithm in C++ called Particle Swarm to find an optimal configuration for SLAC's LCLS (particle accelerator) in order to form a coherent electron beam.
- Used Python MATLAB library for visualization of optimization simulation data.
- Made improvements to the algorithm responsible for the electron beam bandwidth calculation.

**De Anza Cupertino Aquatics**  
*Swim Instructor*

*Cupertino, CA*  
Jun 2014 - Sep 2014

- Taught students ranging from ages 3 to 40 year olds using DACA's swimming curriculum.
- Learned how to communicate effectively with students and how to be creative in creating lesson plans.

**Dim Sum King**  
*Front Worker*

*Sunnyvale, CA*  
Mar 2014 - May 2014

- Served customers Chinese take out food and dealt with pre-orders and phone orders.
- Duties include: operating the cash register, packing food, taking orders in Chinese.

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## PROJECTS

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**Personal Website - <https://shangwayhsu.github.io>**

- Implemented personal website to showcase projects through the use of Bootstrap/HTML/CSS/JavaScript.
- Single-page website with scrolling animations and dynamic background.
- Responsive page with mobile support such as collapsible navigation bar to fit devices with smaller screen sizes.
- Email Contact form powered by Formspre.io.

**To-do List App - iOS App Development**

- Implemented To-do list in Swift and Xcode for iPhone.
- Extensive use of StoryBoard in Xcode for UI elements and navigation control.
- Functionality includes adding new items with title and a short description, and deleting/editing existing fields.

**Autocomplete - C++**

- Used Multiway Trie to implement a dictionary capable of Autocomplete.
- Use of Priority Queue to store relations between nodes to decrease autocomplete time at the cost of space.
- Multiway Trie guarantees  $O(L)$  in `find()` and `autoComplete()`, where  $L$  is length of the longest word.

**Replica of 2048 Puzzle - Java**

- Backend created using Java using matrices to represent the tiles of the game.
- GUI created using JAVAFX 8 and supports window resizing.
- Additional functionality includes: saving game states, loading games from text file, and multiple game grid sizes.