

# Jason Keung

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## EDUCATION

### University of California, Berkeley

August 2018 - May 2022

- B.A. in **Computer Science**
  - B.A. in **Applied Mathematics**, concentration in Computer Science
  - Relevant Coursework: Machine Learning\*, Artificial Intelligence, Optimization Models, Algorithms, Data Structures, Machine Structures, Operating Systems\*, Probability and Random Processes, Real Analysis\*, Numerical Analysis, Discrete Math and Probability Theory, Abstract Algebra, Linear Algebra, Multivariable Calculus
- \* - Planned for Spring 2021

## PROFESSIONAL EXPERIENCE

### Amazon.com Services | Software Development Engineer Intern

June 2020 - August 2020

- Machine Intelligence and Decision Analytics for Search - first SDE intern in a state of the art machine learning team founded in Q4 2018
- Built AWS Step Functions pipeline for Amazon search bar behavioral feature dataset expansion, handling **hundreds of millions of rows**
- Improved runtime of sparse matrix creation of this dataset by **8 - 14x** using PySpark + AWS Elastic MapReduce, from **~8 hrs to 35 min**
- Configured Spark EMR driver/executor and overhead memory and parallelism for the Spark job to avoid having to use a larger machine
- Adapted AWS Lambda function to also get the latest most frequent search queries from AWS S3 to prioritize for dataset expansion
- Trained regressor to scale inference outputs to appropriate scores and augmented the current dataset with tail/frequent but missing entries
- Presented project to my team and Amazon Search, describing context, customer impact, and next steps towards production

### Computer Science Mentors | Senior Mentor

September 2019 - Present

- Host weekly meetings to manage and advise Junior Mentors in teaching their own sections
- Lead weekly sections of 4-6 CS students, reteach core concepts, and work through custom worksheets
- Provide inclusive academic/mental support for students, especially those underrepresented in CS at Berkeley

### UC Berkeley EECS Department | Academic Intern

January 2019 - August 2019

- Taught 20+ students object oriented programming, recursion, data structures, and graph traversals in sections and office hours
- Structure and Interpretation of Computer Programs (CS 61A) - Spring '19, Summer '19, Data Structures (CS 61B) - Summer '19

## PROJECTS

### Knight's Tour Algorithm Demonstration | Java, Java Swing

- Demonstrates a Knight's Tour heuristic-based algorithm in chess and shows a knight piece visiting all 64 squares of the board
- Algorithm prioritizes squares with the least accessibility - moving to squares that may not be accessible in the future first
- User is able to control moves per second, and the sequence of moves is shown in the chessboard

### Algebra Worksheet Generator | Java, Java Swing

- Desktop application to procedurally generate random six-problem worksheets of one-variable equations
- User is able to add new students with an assigned difficulty, create unique student worksheets, and input worksheet scores
- Tracks student progress and adjusts the difficulty of future worksheets generated according to past scores and difficulty

### Feedback Form | React.js, Bootstrap, HTML/CSS/Javascript (<https://jasonkeung.me/feedback-form-frontend>)

- Features form validation using regex and a live character counter controlled component, makes POST request to url
- Built to learn React and improve front-end skills

## SKILLS

**AWS Developer Tools:** Amazon Simple Storage Service (S3), Elastic MapReduce, Lambda, Step Functions/State Machines, Batch

**Big Data/Distributed Computing:** Apache Spark/PySpark Resilient Distributed Datasets/Dataframes, Hadoop DFS, Sparse Matrices

**Data Structures, Algorithms, Optimization**

- Heuristic algorithms, advanced data structures, space/time complexity analysis, search algorithms over data structures and graphs
- Tree recursion, object oriented programming, functional programming
- Convex optimization, duality, quadratic and linear programs, support vector machines, singular value decomposition, least squares

**UI Development**

- React.js, Bootstrap, Materialize, HTML/CSS/Javascript, Java Swing library; integrated CS course command line assignments into UIs

**Python, Java, C++, C**

**Linux/Unix Environments, Git Version Control, SSH, VSCode Remote Development, Martial Arts Instruction, Tutoring**