# Daniel M. Cheng

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**EDUCATION**

**University of Chicago,** Bachelor of Arts in Economics and Psychology, June 2014
**GPA: 3.99/4.0**, Phi Beta Kappa
**Undergraduate:** Algorithms and Data Structures in Computer Science, Linear Algebra, Statistics
**Additional Coursework:** Princeton Algorithms - **Overall Score 95%** on Coursera

**SKILLS**

**Programming Languages:** Java, Android, Python, JavaScript
**Other:** AWS, Linux, Redshift, PostgreSQL, Tableau, SnapLogic, SAS

**RECENT WORK EXPERIENCE**

**Consultant,** Beghou Consulting, Inc., Emeryville, CA Jul 2015 – present

- Cut costs of 20TB Redshift cluster in half and reduced space usage from 95% to 10% w/o query degradation
- Parallelized and tuned daily data pipelines to execute 4 times as fast as before
- Implemented failsafe lock mechanism to prevent concurrent attempted writes to the same Redshift table
- Wrote Linux Scripts to automatically synchronize data between SFTP mount and S3 bucket
- Coded Slack integration to post success/failure, enabling team to easily monitor ETLs

- Wrote core utility library used across the company to automate quality checks, convert between data types, and calculate the transformation sequence between two datasets
- Doubled speed of fuzzy match algorithm using hashtable implementation rather than sorting and merging
- Wrote BK-tree algorithm using Levenshtein distance to autocomplete user name searches
- Built Markov model to predict subsequent words based on historical user input

- Led technical work for 10-person Agile team building dashboards for national sales force of 3,000
- Managed 5-person team in running performant SQL analysis on 2TB+ of healthcare data each week

**RECENT PROJECTS**

**Project Summary:** https://goo.gl/vJTasW

**Automated Drone Photo Service** https://goo.gl/4taYny Sep - Oct 2017

- Built an automated end-to-end drone service to capture real-time photos for traffic monitoring
- Wrote custom Android app to enable SMS-triggered launch and automated drone flight
- Developed Python module to automate photo stitching and cleaning in OpenCV
- Deployed Flask App on AWS to host real-time images sent by the drone
- Guaranteed reliability of real-time photos by synchronizing and optimizing for the limited radio bandwidth

**Scrabble AI (Greedy Search Algorithm)** https://goo.gl/Y2wisi Jul - Aug 2017

- Built AI Scrabble application with complete web play in Python and JavaScript
- Implemented greedy search algorithm using GADDAG data structure (a trie storing every reversed prefix)
- Doubled search speed by reducing branching factor (via backtracking and precomputing constraints)
- Compressed GADDAG data structure from 1.8 GB to 0.8 GB by merging all suffixes and shared edges

**Obstruct.io: A JavaScript Game** https://goo.gl/U78oGg Jun 2017

- Conceptualized and implemented full JavaScript web game complete with user editable levels
- Serialized game state for saving checkpoints and implemented asynchronous callbacks for animations