


# MELODY LI

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## SKILLS

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**Languages:** Python, C, C++, Objective-C, Swift, Kotlin, JavaScript, Go, SQL

**Tools and Frameworks:** UIKit, Node.js, jQuery, Jenkins, Dagger, BigQuery, Linux

**General Skills:** Performance optimization, Data pipelines, Test framework designs, Digital media processing

## WORK EXPERIENCE

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### Snap Inc, iOS Software Engineer

Oct 2021 – present

Camera team, improving the performance, quality and reliability of video messages and developing editing tools on Snapchat iOS. Took ownership of media import services beginning in March 2022.

- Developed end-to-end sound mixing technologies — a top-requested feature from content creators — alongside one other engineer to enable support for multiple audio tracks in creation flow, affecting an estimated 200 million daily video messages
- Migrated all legacy editable-video playback and client-side transcoding services into newer pipeline to accelerate feature development, reducing p50 latency of video backups by 4% and default video message p50 latency by up to 8%
- Led creation of client-side automated test framework in Objective-C and Swift to measure video quality degradation, fixing 5 longstanding issues with transcoded output video frames and identifying up to \$25 million in storage cost-saving opportunities
- Contributed to feature app development efforts to modularize playback and transcoding service by introducing new audio tools, improving engineering productivity and significantly increasing test coverage
- Completed deprecation of legacy video import service by migrating 3 additional camera roll import flows to new import service

### Google, Software Engineering Intern

Sept 2020 – Dec 2020

Hotel rankings team, selecting best name for rental listings to maximize click probability.

- Designed data pipeline to add ranking features to 2 million daily Google-searched query datasets, scoring new datasets in hotel ranking Tensorflow machine learning model and filtering for highest scoring name using C++, Python and SQL
- Configured pipeline to run in parallel using Flume through Borg cluster management system, processing over 3 million template names containing 25 translations each in 20 minutes
- Analyzed ranking model results using BigQuery to determine natural language translation shortfalls, determining a template name selection rate statistical variance of 40% across different languages

### Snap Inc, Software Engineering Intern

May 2020 – Sept 2020

Monetization and ad formats team, improving performance of web view on Snapchat Android.

- Designed application to isolate web view from Snapchat app using Kotlin, Dagger and Jenkins for automated performance testing, allowing collection of performance metrics within a 2% error bound on identical runs
- Migrated lenses web view to newer web service to enable redirecting and deep linking, improving the latency by 6%
- Processed 50+ terabytes of advertisement data using BigQuery in SQL to filter suspicious advertisers, compute ad purchase conversion rate, and model relationships between web view latency and rate of purchase

## **Google, Engineering Practicum Intern**

**May 2019 – Aug 2019**

Worked on ads integrity team, scanning third-party ads for malware and fighting malicious advertisers.

- Designed and automated weekly vendor release process to reduce malvertising escalations using Python, C++ and Go, saving engineers 2 hours of time every week
- Configured 5 new types of querying from ad database to allow historical versioning verification and provide a reverting mechanism
- Implemented script generation in Python and SQL to read and write to SSOT database, resulting in better organized advertiser serving versions and facilitating cross-team referencing

## **Hubdoc by Xero, Software Developer Intern**

**Jan 2019 – Apr 2019**

Worked on automated document fetching from various online services for accountants and bookkeepers.

- Reconstructed asynchronous scrapers for 7 financial services in JavaScript using frameworks include Nightmare.js and jQuery, collecting an estimated 10000+ documents for 7000 clients with an 85% success rate
- Used Backbone.js, Handlebars.js and PostgreSQL to create logging system for tracking service scheduling within company intranet

## **Primate Labs Inc, Hardware Analyst Intern**

**May 2018 – Aug 2018**

Contributed to Geekbench 5, a cross-platform processor benchmarking software.

- Implemented Gaussian blur benchmark in C++, Vulkan and OpenGL Shading Language

## **RESEARCH EXPERIENCE**

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### **University of Waterloo, Undergraduate Research Assistant**

**Jan 2021 – Apr 2021**

Worked under Dr. David A. Clausi on sea ice classification from satellite images using computer vision and deep learning.

## **PROJECTS**

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### **HDR Algorithm (Python)**

- Implemented Debevec-Malik and tone-mapping algorithms to improve blending of homographies captured with different exposures

### **BiQuadris (C++)**

- Collaborated with 2 other students to design multiplayer Tetris battling game with 5 distinct difficulty levels using OOP principles

### **Image processing tool (JavaScript, HTML)**

- Implemented 5 convolution algorithms to create filters and manipulate images, including blurs, grayscale, and edge detection
- Designed scanner algorithm to submit school assignments electronically

## **EDUCATION**

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### **University of Waterloo**

**Honours Bachelor of Computer Science, Minor in Statistics (Dean's Honours List)**

**2017 – 2021**

**Computer science courses:** Compilers, Operating systems, Networks, Computer vision, Security, Artificial intelligence

**Statistics courses:** Stochastic processes, Enumeration & graph theory, Computational inference