

# Collin Zhang

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## EDUCATION

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### New York University

*B.S. Computer Science; B.S., Business.*

Sep 2019 - Jun 2023, New York

## PROJECT EXPERIENCE

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### CoCreate

*Team Leader (Oct 2019 - June 2021)*

- An iOS app integrating real-time collaboration with hand-writing drawing board based on Apple Pencil
- Use of **Flask** and **Socket.IO** with python to build a backend that supports real-time collaboration of drawing
- On the frontend, design an algorithm with **Swift** that converts **CGPoint** with location and force produced by users to segments of **UIBezierCurve** that produce a smooth hand-writing curve
- To achieve lasso on a drawing of thousands of curves, design a map that divides the drawing to 10\*10 squares, **indexing** segments of curves to each square, create an algorithm that determines squares covered by an arbitrary self-intersecting polygon, an algorithm using **ray casting** algorithm to determine whether a segment is in it, achieve 100 times speed up
- Abstracing a drawing module **FastDraw** for modularity, providing a DrawBoardView for drawing, delegation is used to signal operation like drawing, erasing and lasso, so operation can be sent to server for collaboration
- 9.59k downloads on App Store, 9400+ boards created by users
- <https://apps.apple.com/tt/app/cocreate-draw-together/id1548911886?ign-mpt=uo%3D2>

### Covid-19 abnormalities detection on chest radiographs

*July 2021 - August 2021*

- Build a model to detect abnormal area and determine if the patient has Covid-19
- Preprocess data with **pandas**, visualize the radiographs with **matplotlib** and **pydicom**, performing EDA
- Train a **Cascade R-CNN** for bounding box regression with **mmdetection**, a **EfficientNet** for classification with **keras**
- <https://www.kaggle.com/collinzrj/siim-collin>

## INTERNSHIP EXPERIENCE

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### Supersymmetry

*iOS Developer (Jan 2021 - May 2021)*

- Participate in the development of iOS client of the social media app: Project Z with **Swift** and **RxSwift**
- Write reusable UI components with **UIKit**, Use of **Moya** to abstract the api call for understandable code
- Discuss with colleagues from backends for implementation of business logic which is efficient, easier to implement and supports backward compatibility
- <https://apps.apple.com/app/project-z-meet-online-friends/id1528320292>

## SKILLS AND OTHERS

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- Courses: Data Structures, Computer System Organization, Intro to Algorithms, Discrete Math
- Swift, Python, Java, C++, Javascript, SQL, HTML/CSS, Tensorflow, Keras
- Contribution to Tensorflow, Keras, and mmdetection on Github
- <https://github.com/collinzrj>