

# Ching-Cheong Lee

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## ABOUT ME

I graduated from HKUST with an M.Phil degree in Mathematics, worked in both academic and nonacademic fields, with solid knowledge in frontend programming. Passionate about problem solving, which pushes me to expand my technical skills persistently.

## EXPERIENCE

### Software Engineer

Mid of May 2023 ~ Present

Wonderbricks Limited, Hong Kong

**AWS** S3, Cloudfront, Lambda, EC2-loadbalancer, ECS-Fargate, Route53, API-Gateway, RDS

**Frontend** React, Redux-toolkit, React-Native, React-Native-Reanimated, Next, Expo-CLI, Algolia, Socket.io-client, Push Notification for iOS and Android

**Backend** Express, Mongoose, Socket.io, Algolia, Googleapis + Nodemailer, Prisma, Prisma-Kysely, Expo Push Notification, MySQL, PostgreSQL, MongoDB, RabbitMQ, Redis

### Scope of Works.

#### WEB APPLICATION

##### Frontend.

- Build, revamp and maintain React projects in Typescript

##### Backend.

- Maintain SpringBoot project, build APIs using MyBatis and mongo-java-driver

#### MOBILE APPLICATION

##### Frontend.

- Develop this realtime text-messaging and LLM based project from scratch by React-Native and EXPO
- Create reusable components by proper props design and packaging into a class
- Create custom interactive components by React-Native-Reanimated

##### Backend.

- Develop entire backend application from scratch by nodejs, express, socketio, etc
- Develop Lambda functions in python and nodejs for generating report in excel and word
- Designed middleware to let user send text, audio, images via REST apis and get the messages in the room they joined via socket.io
- Implement jwt authentication and refresh-token mechanism in both front and backend
- Develop Push notification system for ios and android
- Design tables for our backend to fulfill challenging requirements from product manager
- In table design, make careful consideration on the data-type of primary keys. Replaced the purely random UUID by ULID to improve performance of insertion
- Unify the structure of API response so that the frontend can handle errors gracefully
- Migrate schema of PostgreSQL DB via Prisma. Have good experience of creating, resolving, and testing migration scripts in dev and non-dev environments

##### System Design.

- Develop message queue system using RabbitMQ to:
  - Rate limit api which has a limit of 100 concurrent calls (azure openai service)
  - Delay actions by means of DeadLetter Queue
- Develop a class in the above message queue system to organize consumption logic, error-report logic and msg-publishing logic in a type-safe way
- Develop a caching system (and a class) to GET and SET cached value in a manageable way
- Develop in-app notification to separate user-specific data from our API, making those API cachable (userid independent)

##### iOS Deployment to AppStore with EXPO.

- Internal Ad-Hoc Distribution
- Store Build for publishing to App Store Connect
- Internal and External Test via TestFlight
- App Submissions and Rejections
- Managed everything above with 4 stages (DEV, UAT, POC, PROD) with different bundle-identifier, ascAppId, version and buildNumber, env (EXPO\_PUBLIC\_XXX's)

##### DevOps / CICD.

- Create automated deployment workflows for frontend and backend via github actions. Which includes:
  - Containerize the nodejs backend > push to image registry > update task definition > instruct ECS Fargate to use updated task

## BLOG

<https://machingclee.github.io/blog>

## PORTFOLIO

<https://machingclee.github.io/portfolio>

## EDUCATION

### MicroMaster in A.I. and Programming

Tecky Academy

Mar 2019 ~ June 2019

### M.Phil. in Mathematics

The Hong Kong University of Science and Technology

Sep 2012 ~ Aug 2014

### B.Sc. in Mathematics

Pure Math Option, 1st Class Honor

The Hong Kong University of Science and Technology

Sep 2009 ~ June 2012

## SKILLS

### Source Control

Git

### Deployment

Docker, Github Actions

### Typescript

React, React-Native, Redux, Redux-Saga, Next.js, Electron.js, Electron with Next.js, Node.js, Express.js, Socket.io, Twilio.js, Knex.js, Mongoose.js, Prisma.js, Prisma-Kysely.js

### Cloud (AWS)

Security Group, Target Group, Load Balancer, ECS Fargate, Route53, S3, CloudFront, Lambda Functions, API-Gateway, RDS

### Java

Maintain Springboot, Hibernate, MyBatis, JOOQ

### Golang

Gin, Goose, Sqlc, Azure-sdk for Voice, Go-Jet

### Python

Tensorflow v2, PyTorch, Pandas, Flask, ONNX, Openpyxl, Boto3

### C++

CMake Ecosystem, Libtorch, OpenCV, ImGui for Desktop App

### C#

Windows Presentation Foundation

### Rust

Implementation of Elliptic Curve Digital Signature Algorithm

- Deployment of documentation project onto S3 and cache-invalidation of cloud-front

#### Other.

- Initiated a google-authenticated documentation project by using Docusaurus to record detail that our developer should know
- Lead, guide and nurture junior programmer by constantly sharing articles, my github projects, and related youtube videos when there are knowledge that they lack of

## AI Engineer

15 Aug 2022 ~ April 2023

Eye Catching Limited, Hong Kong

Python PyTorch

Typescript Tensorflow, Onnx

C++ Libtorch, Imgui, Cmake Ecosystem

#### Scope of Works.

- Maintain angular project
- Study eye-tracing related algorithm
- Study and deploy machine learning algorithm in web-app and desktop-app
- Completely translate a BlazeFace model in python into the same model in libtorch of C++ for GUI application
- Implement methods to ensure weights in pytorch model can be used in libtorch model
- Study CMake and develop software to combine libtorch model and imgui application

## Senior Software Developer

Sep 2021 ~ July 2022

RaSpect Intelligence Inspection Limited, Hong Kong

Python Selenium, Boto3, Mongoengine, gRPC, PyTorch, Tensorflow

Annotation CVAT, COCO-Annotator

AI-General Data Annotation, DataLoader with Various Data Augmentations, Model Training for Rust Detection, Model Training for Crack Detection

AI-Models GAN for Producing Synthetic Data, Faster RCNN from Scratch and its Modification, Single Stage Headless **Face** Detector into **Rust** Detector

#### Scope of Works.

##### WEB RELATED

- Maintain React Next project
- Data scrapping for house transactions records
- Automation on tracking latest rtk-data from official geodetic website and data-processing pipeline
- Work with a local grpc based service in Python to interact with a compiled binary (.exe), messed with multi-threading stuff

##### OBJECT DETECTION RELATED

- **Text Detection.** Manage to run an open-sourced text detection (EAST) to facilitate signboard defect classification
- **Crack Detection.** Help implement detection model for crack and spalling
- **Rust Detection.** Implemented two solutions: **(i)** Text removal, then classification pipeline; and **(ii)** direct object detection model using faster rcnn

##### IMAGE GENERATION/INPAINTING

- **DefectGAN.** Implemented image-generation model following the paper that generate synthetic data on cracks and spallings for training defect detection models on facades
- **Text Removal.** Experimented with existing algorithms like various GAN or image-inpainting method in pytorch. Finally I follow this paper to obtain a text eraser with satisfactory performance

## Art

Photoshop CC, Autodesk 3DS Max

## ART PORTFOLIO

<https://www.artstation.com/check-ercc>

## Software Engineer

Aug 2020 ~ Mid-Aug 2021

EAB Systems (Hong Kong) Limited, Hong Kong

Typescript React, Redux, React-Native, Express, Mongoose, Sendgrid, Twilio, socket.io

Python Pandas, Tensorflow v2

### Scope of Works.

#### WEB APPLICATION

- Build video conferencing frontend and backend application in React, Twilio and express
- Build CMS system that lets users create their own single page application

#### MACHINE LEARNING RELATED

- Build CSV Importer (together with an express layer and a Flask layer) that can parse a csv/excel file and perform:
  - **Data Classification.** Classify column based on existing data using LSTM model with two dense layers and finally a softmax ([sample code](#))
  - **Auto Date-reformatting.** Based on machine learning model (transformer in NLP) that can translate all common form of date into YYYY-MM-DD format ([sample code](#))

## Front-end Developer / Multimedia Worker

Sep 2019 ~ Aug 2020

eLearningPro, Hong Kong

Javascript React

Python tkinter, pyinstaller

Art Adobe Premiere, Adobe Photoshop, Saola Animate(CSS Animation)

### Scope of Works.

- Create HTML5 Games, maintain web pages and construct React frontend application
- Created a python GUI project for text extraction from an image (a work necessary to translate old fresh game into html5 game, [detail](#))

## 2D Game Artist

Jan 2018 - Dec 2018

深圳瘋点子科技有限公司, Sheng Zheng

- Responsible for constructing 3d accessories, creating environment art and character design. Game that I worked on [link](#)

## Senior Research Assistant

Mar 2015 - Oct 2015

Department of Mathematics, Hong Kong Baptist University, Hong Kong

- Study HJB equations arised in specific financial games

## Research Assistant

Sep 2014 - Feb 2015

Department of Mathematics, Hong Kong University of Science and Technology, Hong Kong

- Study the property of viscosity solution of HJB equations

## Teaching Assistant

Sep 2012 - June 2014

Department of Mathematics, Hong Kong University of Science and Technology, Hong Kong

- Fulfill teaching duty as required in obtaining studentship in the course of M.Phil study. Subjects include:
  - Calculus II
  - Linear Algebra
  - Mathematical Analysis
  - Real Analysis