

# MINGHAO (ALEX) HAN

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## Education

<b>Nanjing University</b>   Nanjing	September/2021 – June/2021
Bachelor of Software Engineering	
Notable Courses: Software System Design; Software Engineering and Computing (I, II, III); Computer Operating Systems; Computer Organisation and System Architecture; Digital Circuits and Systems; Practice of Fundamental Programming	
<b>Imperial College Data Science Online Winter School</b>   Exchange/Remote	January/2021 – February/2021
Notable Courses: Machine Learning for Data Science; Exploratory Data Analysis; Visualisation; AI; Data Product	

## Awards & Scholarships

<b>Environment Gaiya Elite Scholarship</b>   Top 5 in Environment Institute	2019
<b>People's Scholarship</b>   Top 20% in Software Institute	2019 and 2020
<b>Excellent Student Award</b>   Nanjing University, Software Institute	2019/2020
<b>Excellent National Project Award</b>   National College Student Innovation Project	2020
<b>Meritorious Winner</b>   The Interdisciplinary Contest in Modeling (ICM) 2021	2021
<b>Imperial College Exchange Scholarship</b>   IC Data Science Online Winter School	2021
<b>Winner Team (Best result)</b>   Team Leader, IC Winter School Course Project	2021
<b>Global Top 2</b>   LinkedIn Global Business Competition	2021
<b>The Star of Virtue in Computer Science</b>   Zhou Zhongji Foundation	2022

## Research

<b>National College Student Innovation Project</b>   Project Host	2019/2020
<i>Supervisor: Professor Haipeng Dai</i>	

- Integrated drone perception technology and computer vision processing to explore solutions to efficient compression and retrieval in a drone swarm; Applied research to epidemic prevention and control, making use of low power consumption and simple computing power of drone to develop a distributed monitoring system with CNN model on server to monitor safe social distance.
- Submitted project to highest national level and received excellence award for innovation and originality; Chosen as team representative to present project findings through informative video and published poster in collaboration with Göttingen University at an International Conference based on design of edge/cloud architecture and edge computing that demonstrated a distributed system for epidemic prevention and control.

<b>Video Analytics</b>   Group Member of Laboratory of Advanced Networking and Data Science	October/2020 – Now
<i>Doctor Weijun Wang</i>	

- Designed video analytics pipeline with aim of addressing issues of time cost of Super Resolution, drop in quality of Super Resolution due to dynamic video content, and Bandwidth variation. Applied multiple strategies to solve these problems, including edge/cloud architecture, enhanced deep residual networks, retraining SR model, choosing and reusing SRed frames to reconstruct; Article submitted to HotNets 2021, preparing to be submitted to NSDI 2022.

<b>Social Distancing and Contact Tracing System for Covid-19</b>   Team Member	August/2021
<i>Professor Haipeng Dai</i>	

- Addressing Delta strain of COVID-19 virus outbreak in Nanjing in accordance with request from Nanjing government for solutions and technical measures from universities for epidemic prevention and control. Professor Dai submitted a proposal based on my achievements in the College Student Innovation Project.
- Proposal applies multi-model combination of Bluetooth and Computer Vision technologies to build an enhanced social distance detection and contact tracing system.

**Traffic Light Detection Model with yolov4** | Project Leader (in Intelligent Software Engineering Lab) May/2022  
*Professor Zhenyu Chen*

- Applied an improved deep learning model, several datasets, and the methods of augmentation to build an accurate and real-time traffic light detection model. The results demonstrate that while consuming very few resources, our model can detect 33 frames per second, and the mean accuracy precision in red and green light can reach 85%, which is very close to the newest research.
- The model has been submitted to the National Innovation Center of Intelligent and Connected Vehicles (CICV) as one of the solutions to the released tasks.

## Internship Experience

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**Tencent Holdings Ltd.** | Staff of Technical Architecture Department July/2021 – September/2021

- Developing Graph Database for WeChat to face big data pressure from over 1 billion active users per month.
- Contributing to development of a new Graph Database Management System named WeGraph, specifically on Cypher query syntax, computing functions, and unit tests. New system is premised on maintaining separate storage and computing functionality as well as column-oriented computing and streaming computing to cope with challenges of WeChat's exponentially growing data flow.

## Publications

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- Weijun Wang, Tingting Yuan, **Minghao Han**, Meng Li, Han Zhang, Yu Ma, Sripriya Srikant Adhatarao, Xiaoming Fu. "Real-Time Social Distancing Measurement and Record System for COVID-19" Poster presented at 2021 International Conference on Embedded Wireless Systems and Networks (EWSN 2021)
- Jinghao Ma, Lin Sun, **Minghao Han**, Quanhong Li. "Neural-enhanced decoder for video analytics streaming" the Twentieth ACM Workshop on Hot Topics in Networks (HotNets 2021) (received review)

## Extracurricular Activities

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**Volunteer Club, Nanjing University** | Activity / Finance Department September/2018 – June/2020

- Attended over 40 voluntary activities and accrued over 300 volunteer hours.
- Awarded Excellent Volunteer of Nanjing University (2019 and 2020).
- Awarded Excellent Enrollment Volunteer. Reported on the Yangzhou City Newspaper.
- Heartsaver CPR AED Certificate (American Heart Association).

**Go Club, Nanjing University** | Liaison / Publicity Department September/2018 – June/2020

- Used to be national second-class athlete. Personal ranking of 4 in NJU Freshman Cup.
- Captain of team in regional competition with personal ranking of 4 and team ranking of 2. Qualified to present Tencent Go Club to participate in Shenzhen League.
- Edit and manage the social media account of the club. Readings of each article exceed 1000.
- Club was awarded the Top 10 student clubs in Nanjing University (2019 and 2020).

## Skills

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**Computer:** C++; Linux; Python; Java; C; Html/CSS; Javascript

**Languages:** Mandarin (native); English (fluent)

**Hobbies:** Volleyball; Basketball; Swimming; Badminton; All Kinds of Chess