

# Tong (Tony) CHEN

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## EDUCATION

**Carnegie Mellon University** *School of Computer Science*

Pittsburgh, PA

Master of Computational Data Science

May 2021

**Zhejiang University** *Chu Ko Chen Honors College*

Hangzhou, China

Bachelor of Computer Science & Technology | GPA: 3.79/4.0 | Honors Degree

Jun. 2019

## SKILLS

**Programming Languages:** Python, C/C++, MySQL

**Tools:** PyTorch

**Environments:** MIPS, Linux, WordPress

## RESEARCH EXPERIENCE

**Information and Knowledge Discovery Lab**

Los Angeles, CA

**University of Southern California** | *Research Intern*

Nov. 2018 – May 2019

- Worked on Knowledge Graph embedding and reasoning with aid of text (namely Open Knowledge Graph Reasoning), implemented RL model design and tested them on two datasets to see noticeable improvement
- Assisted in research on the novel concept of Dynamic Knowledge Graph reasoning (KGs with timestamps), generated various monograph (1-relation) KG datasets, summarized and modified baseline models and tested different model designs
- Submitted paper as authors to EMNLP 2019, which has been accepted; another for ICLR 2020 pending review
- Undergraduate thesis in same topic received outstanding thesis award

**Cambridge Vehicle Dynamics Consortium**

Cambridge, UK

**University of Cambridge** | *Research Intern*

Jul. 2018 – Sep. 2018

- Developed a C implementation for conversion between navigation coordinate systems, and elevation inference based on coordinates from the UK Ordnance Survey LIDAR database as a module for MatLab
- Collected sensors and GPS data from real-world operating trucks by Android smartphones, and compared accuracy of data from various online sources
- Achieved 50% more accuracy on weight and rolling factor inference based on force analysis and regression analysis formulas than pure sensor-based methods
- Submitted paper as authors to Transportation Research Part D: Transport and Environment

**Artificial Intelligence Lab, School of Computer Science**

Hangzhou, China

**Zhejiang University**

Jan. 2018 – Jun. 2018

- Optimized Beijing's 3000-line, 10K-station public transit network model to cut passenger daily commute time by adding and changing lines and station positions, based on the 600K-user real home-to-work data from Baidu Map and annual network changes as ground truth
- Implemented Tensorforce and Q-Routing Reinforcement Learning algorithms, comparing it with Ant Colony Optimization, Genetic Algorithm and other optimization algorithms set out historically for this issue while not to this scale

## PROJECTS

**IBM Student Innovation Lab – Image Table Recognition & Content Extraction Team**

Zhejiang University

Dec. 2017 – Apr. 2018

- Wrote code for table structure detection based on OpenCV, and used Recursive Neural Network as an end-to-end OCR device in assisting the process
- Aimed for recognizing formulated tables such as tickets, tax invoices, etc., into formalized data interface for data analysis and registry usages
- Achieved considerable accuracy on random pictures, e.g. table-form receipts and score lists, collected from the Internet
- Received Outstanding Performer award by IBM GCG University Partnership

**Zhejiang University Model United Nations Association Delegate Management System**

Zhejiang University

Mar. 2017 – Oct. 2017

- Conducted feature upgrading including implementing a new user interface and temporary feature adjustments, and enhanced website routines through server migration, debugging, and normalization to ensure future reuse and better user experience
- Wrote the software programming demand document according to delegation recruitment routines of general Model United Nations conferences
- Fulfilled 800 registered delegates' academic, authentication, payment and business needs

**The Mathematical Contest in Modeling 2017, Consortium for Mathematics and Its Applications**

Zhejiang University

Jan. 2017

- Collected usable precipitation and river hydrology data of Zambezi River Basin from open sources
- Used C++ to implement a flow simulation program, based on the basin water flow model using basic hydrological principles
- Used Matlab to generate flow and precipitation simulations based on monthly average and extreme data
- Received Meritorious Winner Award

## PUBLICATIONS

B. Liao, J Zhang, C Wu, D McIlwarth, T. Chen, S Yang, Y Guo, F Wu, "Deep Sequence Learning with Auxiliary Information for Traffic Prediction", KDD 2018.  
C. Fu, T. Chen, M Qu, W Jin, X Ren, "Collaborative Policy Learning for Open Knowledge Graph Reasoning", EMNLP 2019.

## EXTRA CURRICULAR ACTIVITIES

**Zhejiang University Model United Nations Association**

Deputy Chairman

Nov.2016 – Nov.2017