

Chi Hong

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Education

Delft University of Technology (The Distributed Systems Group, EWI)

Delft, the Netherlands

PH.D IN MACHINE LEARNING

2020 - present

- **2 academic papers** in machine learning.
- **Reviewer** in ATC2021 and SIGMETRICS2021
- **Fully-funded** Ph.D position

Tsinghua University (Department of Computer Science and Technology)

Beijing, China

M.S. IN COMPUTER SCIENCE AND TECHNOLOGY

2015 - 2018

- **3 academic papers** in computer architecture and machine learning.
- **Kwang-Hua Scholarship** at Tsinghua University
- **Outstanding Student Leader Award** in Graduate Student Union of the Department of Computer Science and Technology

Tianjin University (School of Computer Science and Technology)

Tianjin, China

B.E. IN COMPUTER SCIENCE AND TECHNOLOGY

2010 - 2014

- 1 of 6 **Merit Student Award** recipients in 110 students for two years
- **Outstanding Graduate Thesis Award** about human-robot interaction
- Getting funding from College Students' Innovative Entrepreneurial Training and **leading** the project

Research Experience

High-efficient and Robust Optimization for Machine Learning Systems

Delft, the Netherlands

DISTRIBUTED INTELLIGENT SYSTEMS LAB (TU DELFT)

2020 - present

- Training machine learning (ML) models in distributed environments is critical for large scale learning and data privacy. One topic of this study is designing algorithms and platforms for **distributed ML**. Partial study results on Federated Learning are **submitted** to **KDD2021**.
- Another topic of this study is robust and high-efficient optimization methods for ML applications and systems. Contributions on first order stochastic optimization and convergence analysis are **published** in **WWW2021**.

Real-time Rendering and Game Engine Development

Hangzhou, China

NETEASE COMPANY & INDIE DEVELOPER

2018 - 2020

- Online game engines require a **distributed server** to synchronize the data on different clients and handle the messages sent from clients. This study focuses on the development of a **multiprocessing server** to address the problems.
- Real-time rendering is a meaningful technology for virtual reality, computer games etc. This study also focuses on **real-time rendering** like using Unity3D to construct 3D games, accelerating the real-time rendering pipeline of GUI, and building new rendering components in game engines.

Machine Learning Models for Crowdsourcing

Beijing & Delft

RESEARCH INSTITUTE OF INFORMATION TECHNOLOGY (TSINGHUA), THE DISTRIBUTED SYSTEMS GROUP (TU DELFT)

2017 - 2020

- This research is about designing algorithms to aggregate noisy labels collected from non-professional crowds, so as to make large labeled datasets in a cheap way. The related machine learning techniques including **unsupervised optimization**, **Bayesian learning** and **neural networks**.
- Contributions on online label aggregation are published in **WWW2021**. The works about generative models for crowdsourcing are shown in a **preprint paper**.
- The machine learning models for crowdsourcing can be well combined with **active learning** frameworks. The results are published as a invited paper in **CogMI2020**.

Computer Architecture for Speeding up Machine Learning Algorithms

Beijing, China

MICRO-PROCESSOR AND SoC TECHNOLOGY R&D CENTER (TSINGHUA)

2015 - 2018

- In chip multiprocessor architecture, the last level cache blocks are distributed in different places. To reduce the wire delay in data transmission, a novel cache **coherence protocol** is designed to enable shared last level cache blocks to coexist with private last level cache blocks. This work is published in **ICCC2016**
- Training sparse neural networks and applying special hardware devices to accelerate them. Sparse neural networks are the neural networks which have a large number of continuous zero value parameters. The results are published in **DAC2018**.

Optical Character Recognition

Guangzhou, China

BAIOO COMPANY

2014 - 2015

- The main purpose of optical character recognition (OCR) is to recognize the characters or words in image files. Before the recognition, the text should be detected and the characters should be split. In this project several text detection algorithms and character splitting algorithms are implemented for a OCR service.
- Development tool: Java/SpringMVC/MySQL/Docker/Python. Machine learning models like CNN and SVM are used to recognize character images.

Human-Robot Interaction

Tianjin, China

TIANJIN KEY LABORATORY OF COGNITIVE COMPUTING AND APPLICATION

2013-2014

- Kinect sensors can capture the world around the user in 3D. In this study, a Kinect is applied to design some simple motion recognition algorithms. Based on the algorithms, a human-robot interactive system is constructed. Users can use some simple motions to control a NAO robot via this system.

Publications

- [1] **Chi Hong**¹, et al. Online Label Aggregation: A Variational Bayesian Approach, WWW 2021. (Accepted)
- [2] Jiyue Huang, **Chi Hong**², et al. Is Shapley Value fair? Improving Client Selection for Mavericks in Federated Learning, KDD 2021. (Under Review)
- [3] Taraneh Younesian, **Chi Hong**², et al. End-to-End Learning from Noisy Crowd to Supervised Machine Learning Models, CogMI 2020. (Accepted)
- [4] Peiqi Wang, Yu Ji, **Chi Hong**³, et al. SNrram: An Efficient Sparse Neural Network Computation Architecture Based on Resistive Random-Access Memory, DAC 2018. (Published)
- [5] Hongmin Lou, Chunlu Wang, **Chi Hong**³, et al. DSSR: An Algorithm for Data Source Selection to Reconstruct Data in Erasure Codes, Sciencepaper Online 2018. (Published)
- [6] **Chi Hong**¹. Generative Models for Learning from Crowds, arXiv 2017. (Preprint)
- [7] **Chi Hong**¹, et al. PASCMP: A Novel Cache Framework for Data Mining Application, ICC 2016. (Published)

Work Experience

HEX Studio, Engine Group, NetEase Company

Hangzhou, China

SENIOR SOFTWARE ENGINEER

2018 - 2019

- **Real-time rendering engine** development, Speeding up the real-time rendering of GUI.
- Ensuring data consistency between different clients by a **multiprocessing server** deployed in computer clusters.

Wenta Project, BAIOO Company

Guangzhou, China

SOFTWARE ENGINEER

2014 - 2015

- Algorithm development for **optical character recognition** (OCR) including text detection and character splitting etc.
- **Machine learning** models for character image recognition

Personal Skills

Coding **Python>C++>Java>Matlab>SQL**, Deep Learning, Graphic Models, Real Time Rendering, Web Server
English **Great Language Ability**, Working and communicating in English, understanding English materials quickly.
Related **Knowledge**, PyTorch, Tensorflow, Unity3D, MySQL, Docker, Socket, SpringMVC
Thinking **Special Insight to Overview**, Organizing ideas logically, Exploring essences independently, Abstract ability.

Honors & Awards

2017	Outstanding Student Leader Award , Award for Outstanding Members in Graduate Student Union	Tsinghua University
2016	Kwang-Hua Scholarship , Award for Merit Graduate Students	Tsinghua University
2014	Outstanding Graduate Thesis Award , Award for Top 20% Bachelor's Graduate Theses	Tianjin University
2013	Merit Student Award , Annual Student Achievement Assessment	Tianjin University
2012	Funding from College Students' Innovative Entrepreneurial Training , for Student Research Projects	Tianjin University
2012	Merit Student Award , Annual Student Achievement Assessment	Tianjin University