# Delong Chen (陈德龙)

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## Education

**BSc in Computer Science** **Hohai University** **Sept. 2017 – Jun. 2021**

*Nanjing, China*

First-Class Outstanding Graduation Thesis in Jiangsu Province

Outstanding Graduation Thesis of Hohai University

Outstanding Graduate of Hohai University (highest honor)

GPA: 83/100

## Experiences

**Research Assistant** **Hohai University** **Jun. 2021 – Present**

Research Topics: Vision-language, Music-motion, and Hydrological Forecasting *Nanjing, China*

**Research Intern** **MEGVII Research** **Oct. 2021 – Present**

Research Topic: Efficient Large-scale Vision Language Pretraining *Beijing, China*

**Summer Program** **University of British Columbia** **Jul. 2018 – Aug. 2018**

Two courses: Linguistics and Computation for NLP (Scores: 85/100, 97/100) *Vancouver, Canada*

## Research

**Large-scale Vision Language Pretraining** ***MEGVII Research***

- Proposed ProtoCLIP for improved representation grouping and enhanced robustness against modality gap in CLIP-style VLP. Improved linear probing and zero-shot accuracy by 5.8% and 2.0%, and matches the performance of CLIP with 4×fewer epochs (paper, code).
- Utilized Pretrained Language Models to benefit vision language models based on knowledge distillation and model adaption (on-going research).

**Vision Language Learning on E-commerce Domain** ***Hohai University***

- Created a multimodal E-commerce dataset MEP-3M for vision-language / fine-grained / hierarchical classification / long-tailed learning research. Awarded *LTDL-IJCAI'21* Best Dataset Paper (paper, dataset).
- Extended MEP-3M dataset to zero-shot product classification, image-text retrieval, semantic segmentation, and automatic checkout-oriented object detection pretraining (on-going research).

**Music-Motion Understanding and Generation (Graduation Thesis)** ***Hohai University***

- Created the largest orchestra conducting dataset *ConductingMotion100* consisting of 100 hours of paired music and motion clips. A competition held by JSCS adopted this dataset (JSCS Anouncement, dataset).
- Proposed the first deep learning-based music-driven conducting motion generation model $M^2$S-GAN, which integrates generative and contrastive multimodal SSL into a unified framework (paper, Turing test video).
- Developed a demo system *VirtualConductor* based on $M^2$S-GAN, 3D animation and pose transfer. It was awarded as ICME Best Demo and First-Class Outstanding Graduation Thesis of Jiangsu Province (paper, Demo video)
- Employed music-motion pretraining on *ConductingMotion100* and multimodal Masked AutoEncoder to improve music beat tracking performance (on-going research).

**Hydrological Forecasting** ***Hohai University***

- Constructed the *HHForecasting* codebase for flood forecasting. Benchmarked 12 types of machine learning and deep learning baseline approaches, including Linear Regression, SVR, LSTM, TCN, STGCN, etc.
- Proposed wavelet decomposition for improved significant wave height prediction performance (paper).
- Validated domain adaptation for flood forecasting and proposed the first unsupervised approach for transfer learning-based flood forecasting (paper).

**Other Experiences**

- Authored survey papers on deep learning-based single sample face recognition [7], fatigue detection [8], and scanning image-based COVID-19 diagnosis [9,10].
- Implemented a fabric defect detection system based on Gabor Wavelets + CNN and won the third prize in the 8th "China Software Cup" Competition East China Division Finals as the team leader.
- Implemented a trainable 2-layer non-linear neural network using Assembly language as the coursework of "The Principle and Application of Microcomputer".
- Lead a national innovative project "Missing Person Searching based on Age-Invariant Face Recognition".

# Awards

**Academic Awards**

- First-Class Outstanding Graduation Thesis in Jiangsu Province
- Outstanding Graduation Thesis of Hohai University
- Best Demo Award in *IEEE International Conference on Multimedia and Expo (ICME) 2021*
- Best Dataset Paper Award in *Long-Tailed Distribution Learning Workshop, IJCAI 2021*
- Best Presentation Award in *International Conference on Big Data and Artificial Intelligence (BDAI) 2021*

**Honors and Prizes**

- Outstanding Graduate of Hohai University
- Outstanding Communist Youth League Member of Jiangsu Province
- Nomination of the Person of the Year in Jiangsu Province
- Person of the Year of Hohai University in 2019
- Delegate of the All-China Student Federation
- Third Prize of the 8th China Software Cup, East China Division Finals (team Leader)

# Skills

- **Coding**: Python, PyTorch
- **English**: IELTS 7.0, passed CET-4 and CET-6 exams.
- **Music background**:
  - Received diploma in violin performance from Central Conservatory of Music (top level).
  - Served as the head of Hohai University Symphony Orchestra (May. 2019 - Sept. 2020).
  - 20+ public performances of composed music.
  - Organized an online performance of 11 orchestras (video). Responsible for music composition, mixing, and video making. 20+ Media coverage: Xinhua News, People's Daily, etc.

# Publications

**Vision and Language**

[1] **Delong Chen**, Zhao Wu, Fan Liu, et al.
**Prototypical Contrastive Language Image Pretraining**
*ArXiv*, submitted to a top-tier conference.

[2] **Delong Chen**, Fan Liu, et al.
**MEP-3M: A Large-scale Multi-modal E-Commerce Products Dataset**
*IJCAI 2021 Workshop on Long-Tailed Distribution Learning.* **(Best Dataset Paper)**

### Music and Motion

[3] Fan Liu, **Delong Chen** (corresponding), et al.
**Self-Supervised Music Motion Synchronization Learning for Music-Driven Conducting Motion Generation**
*Journal of Computer Science and Technology, JCST,* (**SCI**, **IF**: 1.871, CCF-B) 2022.

[4] **Delong Chen**, Fan Liu, et al.
**VirtualConductor: Music-driven Conducting Video Generation System**
*2021 IEEE International Conference on Multimedia & Expo, ICME'21.* **(Best Demo)**

### Hydrological Forecasting

[5] **Delong Chen**, Fan Liu, et al.
**Significant Wave Height Prediction based on Wavelet Graph Neural Network**
*2021 4th International Conference on Big Data and Artificial Intelligence, BDAI'21.* **(Best Presentation)**

[6] **Delong Chen,** Ruizhi Zhou, Yanling Pan, Fan Liu.
**A Simple Baseline for Adversarial Domain Adaptation-based Unsupervised Flood Forecasting**
*Technical Report*, *ArXiv*, 2022.

### Face Recognition and Analysis

[7] Fan Liu, **Delong Chen** (joint first author), et al.
**Deep Learning based Single Sample Face Recognition: A Survey**
*Artificial Intelligence Review, AIRE*, 2022. (**SCI**, **IF**: 9.588)

[8] Fan Liu, **Delong Chen**, et al.
**A Review of Driver Fatigue Detection and Its Advances on the Use of RGB-D Camera and Deep Learning**
*Engineering Applications of Artificial Intelligence.* (**SCI**, **IF**: 7.802)

### Other Topics

[9] Fan Liu, **Delong Chen** (corresponding), et al.
**Let AI Perform Better Next Time—A Systematic Review of Medical Imaging-based Automated Diagnosis of COVID-19: 2020-2022**
*Applied Sciences*, 2022. (**SCI**, **IF**: 2.838)

[10] **Delong Chen**, Shunhui Ji, Fan Liu, et al.
**A Review of Automated Diagnosis of COVID-19 Based on Scanning Images**
*2020 6th International Conference on Robotics and Artificial Intelligence, ICRAI'20.*

[11] Fan Liu, Junfeng Wang, **Delong Chen**, et al.
**Asymmetric Exponential Loss Function for Crack Segmentation**
*Multimedia Systems*, 2022. (**SCI**, **IF**: 2.603)