Delong Chen (陈德龙)

chendelong.world | chendelong@hhu.edu.cn | (+86)152-9578-2658

Education

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

The First Prize of Outstanding Undergraduate Thesis in Jiangsu Province
Outstanding Graduation Thesis of Hohai University
Outstanding Graduate (GPA: 83/100)

Experiences

Research Assistant **Hohai University** **Jun. 2021 – present**
Topic: music-motion learning, hydrological forecasting Nanjing, China

Research Intern **MEGVII Research** **Oct. 2021 – present**
Topic: vision language pretraining Beijing, China

Summer Program **University of British Columbia** **Jul. 2018 – Aug. 2018**
Linguistics and Computation for NLP (Score: 85/100, 97/100) Vancouver, Canada

Research Experiences

➢ Vision and language

- Proposed ProtoCLIP for improved representation grouping and enhanced robustness against modality gap in CLIP-style VLP. It improves linear probing and zero-shot accuracy by 5.8% and 2.0% [1].
- Created an E-commerce dataset MEP-3M for vision-language / fine-grained / hierarchical / long-tailed learning research. It is awarded as Best Dataset Paper in LTDL@IJCAI'21 [2].
- Extended MEP-3M for zero-shot transfer, retrieval, semantic segmentation, and automatic checkout-oriented object detection pretraining [3].
- (Ongoing research) distilling rich knowledge in pretrained language models to visual student.

➢ Music and motion

- Created the largest orchestra conducting dataset *ConductingMotion100*, which consists of 100 hours of paired music and motion clips. A competition is held with this dataset.
- Proposed the first deep learning-based music-driven conducting motion generation model M^2S-GAN, which integrates multimodal generative SSL and discriminative SSL into a unified framework [4],.
- Developed a demo system *VirtualConductor* based on M^2S-GAN, 3D animation and pose transfer. It is awarded as ICME Best Demo and 1st Prize of Outstanding Graduation Thesis of Jiangsu Province [5,6].
- (Ongoing research) pretraining music beat tracker on *ConductingMotion100* with Masked AutoEncoder.

➢ Hydrological forecasting

- Constructed a codebase *HHForecasting* that implements 12 types of machine learning and deep learning baselines for flood forecasting.
- Proposed wavelet decomposition for improved significant wave height prediction performance [7].
- Validated domain adaptation for flood forecasting and proposed the first unsupervised baseline [8].

➢ Other project experience

- 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 two-layer non-linear neural network using assembly language as the coursework of "The Principle and Application of Microcomputer".
- Conducted national-level innovative training project "Missing Person Searching System based on Age-Invariant Face Recognition" as the team leader.

Awards

➢ Academic awards

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

➢ Honors

- 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
- Elected as a delegate of the All-China Student Federation

➢ Prizes

- Third Prize of the 8th China Software Cup, East China Division Finals (team Leader)

Skills

- **English**: IELTS=7.0, passed CET-4 and CET-6 exam.
- **Coding**: Python, PyTorch
- **Music background**:
  - Received diploma in violin performance from Central Conservatory of Music (top level).
  - Served as the head of Hohai University Symphony Orchestra during May. 2019 and Sept.2020.
  - 20+ public performances of composed pieces.
  - Organized an online performance of 11 orchestras. Responsible for music composition, mixing, and video making. 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. *NeurIPS 2022* submission. [paper][code]

[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)** [paper][dataset]

[3] Fan Liu, Delong Chen, et al. MEP-3M: A Large-scale Multi-modal E-Commerce Products Dataset. *Pattern Recognition* submission.

➢ Music and Motion

[4] Fan Liu, Delong Chen (corresponding author), et al. Self-Supervised Music Motion Synchronization Learning for Music-Driven Conducting Motion Generation. In *Journal of Computer Science and*

Technology, JCST, (**SCI**, **IF**: 1.871, CCF-B) 2022. [paper][code][video]

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

[6] Music-driven Conducting Motion Generation based on Motion Decomposition and Self-supervised Cross-modal Perceptual Loss (Outstanding Graduation Thesis of Hohai University, **The First Prize of Outstanding Undergraduate Thesis in Jiangsu Province**).

➢ Hydrological Forecasting

[7] 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)** [ArXiv]

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

➢ Survey Papers

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

[10] 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, EAAI* (**SCI**, **IF**: 7.802) submission, under review (to be accepted after minor revision).

[11] 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.* [ArXiv]

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

➢ Other Topics

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

[14] Zhibin Chen, Fan Liu, Delong Chen, et al. Weakly Correlated Adversarial Learning for Cognitive Diagnosis System. *2021 IEEE International Conference on Multimedia & Expo, ICME'21, Demo Track.*

陈德龙

chendelong.world | chendelong@hhu.edu.cn | (+86)152-9578-2658

背景

计算机科学与技术专业学士学位 **河海大学 (211/双一流)** **2017.09 - 2021.06**
江苏省优秀毕业论文一等奖，河海大学优秀毕业论文 南京
优秀本科毕业生（GPA: 83/100）

科研助理 **河海大学** **2021.06 - 至今**
研究方向：音乐与动作多模态学习、水文预报 南京

算法实习生 **旷视研究院** **2021.10 – 至今**
研究方向：视觉-语言预训练 北京

暑期项目 **不列颠与哥伦比亚大学 (US News: 37)** **2018.07 – 2018.08**
自然语言处理：语言学方向与计算学方向（Scores: 85/100，97/100） 加拿大，温哥华

科研经历

➢ 视觉与语言

- 提出 ProtoCLIP 以提升 CLIP 预训练过程中表征聚簇（representation grouping）效率以及对模态鸿沟（modality gap）的鲁棒性，在线性评估与零样本分类任务上分别提升 5.8%与 2.0%的准确率 [1].
- 构建了面向多模态学习、细粒度分类、层次分类、长尾分布学习任务的大规模电商商品数据集 MEP-3M，获评 LTDL@IJCAI'21 Best Dataset Paper [2].
- 将 MEP-3M 拓展至零样本商品识别、商品检索、语义分割，以及面向自动零售场景的目标检测器预训练[3].
- 在研项目：将预训练自然语言模型中的知识蒸馏至视觉模型.

➢ 音乐与动作

- 构建了包含 100 小时音频动作数据的 *ConductingMotion100* 数据集，为同类数据集中规模最大，被江苏省计算机学会主办的"远见杯"挑战赛所采用.
- 将生成式与判别式自监督学习融合为统一的框架，的提出首个基于深度学习的音乐驱动的指挥动作生成算法M^2S-GAN [4].
- 基于M^2S-GAN, 三维建模与姿态迁移技术, 开发 *VirtualConductor* 演示系统, 获评 ICME'21 Best Demo、河海大学优秀本科毕业论文、江苏省优秀本科毕业论文一等奖 [5,6].
- 在研项目：基于掩码自编码器在 *ConductingMotion100* 数据集预进行节拍检测器预训练.

➢ 水文预报

- 构建洪水预报 codebase *HHForecasting*，实现 12 种机器学习与深度学习基线模型.
- 将毕设动态频域分解算法迁移至水文预报，提出基于小波频域分解的海浪有效波高预报方法 [7].
- 验证基于对抗领域自适应的洪水预报方法，构建首个无监督洪水预报基线模型 [8].

➢ 其它项目

- 实现基于 Gabor 小波与 CNN 的瑕疵定位与识别系统，获第八届"中国软件杯"华东赛区决赛三等奖（团队负责人），获 1 项软件著作权授权（第一作者）.
- 基于汇编语言实现包含两个非线性层的可训练神经网络，作为"微型计算机原理与实践"课程作业。
- 主持国家级大学生创新创业训练计划项目"基于跨年龄人脸识别的失踪人口匹配系统".

荣誉与奖项

➢ 学术奖项

- 江苏省优秀毕业论文一等奖.
- 河海大学 2021 届本科优秀毕业设计.
- Best Dataset Paper Award in *Long-Tailed Distribution Learning Workshop, IJCAI 2021.*
- Best Demo Award in *IEEE International Conference on Multimedia and Expo (ICME) 2021.*
- Best Presentation Award in *International Conference on Big Data and Artificial Intelligence (BDAI) 2021.*

➢ 荣誉

- 河海大学 2021 届本科“优秀毕业生”荣誉称号.
- “江苏省优秀共青团员”称号.
- “2019 江苏省大学生年度人物”提名奖.
- 2020 年河海大学“海韵风华大学生年度人物”称号.
- 推选为中华全国学生联合会第二十七次代表大会（全国学联二十七大）代表.

➢ 竞赛奖项

- 第八届“中国软件杯”华东赛区决赛三等奖（团队负责人）.

专业技能

- **英语**：雅思: 7.0，通过 CET-4, CET-6.
- **编程**：熟悉 Python、Pytorch 框架.
- **音乐背景**:
  - 获中央音乐学院小提琴演奏文凭级证书.
  - 于 2019.05-2020.09 担任河海大学管弦乐团团长.
  - 有作曲（Sibelius）、编曲（Cubase）经验，作曲作品公开演出 20+次.
  - 策划组织 11 所高校乐团云合奏，完成作曲、混音、视频制作. 媒体报道：新华社、人民日报等.

论文成果

➢ 视觉与语言

[1] Delong Chen, Zhao Wu, Fan Liu, et al. Prototypical Contrastive Language Image Pretraining. *NeurIPS 2022* submission. [paper][code]

[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)** [paper][dataset]

[3] Fan Liu, Delong Chen, et al. MEP-3M: A Large-scale Multi-modal E-Commerce Products Dataset. *Pattern Recognition* submission.

➢ 音乐与动作

[4] Fan Liu, Delong Chen (通信作者), et al. Self-Supervised Music Motion Synchronization Learning for Music-Driven Conducting Motion Generation. In *Journal of Computer Science and Technology, JCST,* (**SCI**, **IF**: 1.871, CCF-B) 2022. [paper][code][video]

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

[6] 《基于动态频域分解与跨模态感知的乐队指挥动作生成》. 河海大学优秀本科毕业论文，江苏省

优秀本科毕业论文一等奖.

➢ 水文预报

[7] 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)** [ArXiv]

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

➢ 综述论文

[9] Fan Liu, Delong Chen (共同一作), et al. Deep Learning based Single Sample Face Recognition: A Survey. *Artificial Intelligence Review, AIRE* (**SCI**, **IF**: 9.588), 2022.

[10] 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, EAAI* (**SCI**, **IF**: 7.802) submission, under review (to be accepted after minor revision).

[11] 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.* [ArXiv]

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

➢ 其它论文

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

[14] Zhibin Chen, Fan Liu, Delong Chen, et al. Weakly Correlated Adversarial Learning for Cognitive Diagnosis System. *2021 IEEE International Conference on Multimedia & Expo, ICME'21, Demo Track.*