

Delong Chen (陈德龙)

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Education

BSc in Computer Science	Hohai University	Sept. 2017 – Jun. 2021
First-Class Outstanding Graduation Thesis in Jiangsu Province		<i>Nanjing, China</i>
Outstanding Graduation Thesis of Hohai University		
Outstanding Graduate of Hohai University (GPA: 83/100)		

Experiences

Research Assistant	Hohai University	Jun. 2021 – Present
Research Topics: Vision-language, Music-motion, and Hydrological Forecasting		<i>Nanjing, China</i>
Research Intern	MEGVII Research	Oct. 2021 – Present
Research Topic: Efficient Large-scale Vision Language Pretraining		<i>Beijing, China</i>
Summer Program	University of British Columbia	Jul. 2018 – Aug. 2018
Courses: Linguistics and Computation for NLP (Scores: 85/100, 97/100)		<i>Vancouver, Canada</i>

Research

Large-scale Vision Language Pretraining	MEGVII Research
<ul style="list-style-type: none">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
<ul style="list-style-type: none">Created a multimodal E-commerce dataset MEP-3M for vision-language / fine-grained / hierarchical classification / long-tailed learning research. Awarded <i>LTDL-IJCAI'21</i> 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 [3].	
Music-Motion Understanding and Generation (Graduation Thesis)	Hohai University
<ul style="list-style-type: none">Created the largest orchestra conducting dataset <i>ConductingMotion100</i> consisting of 100 hours of paired music and motion clips. A competition held by JSCS adopted this dataset (JSCS Announcement, dataset).Proposed the first deep learning-based music-driven conducting motion generation model M^2S-GAN, which integrates generative and contrastive multimodal SSL into a unified framework (paper, Turing test video).Developed a demo system <i>VirtualConductor</i> based on M^2S-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 <i>ConductingMotion100</i> and multimodal Masked AutoEncoder to improve music beat tracking performance (on-going research).	
Hydrological Forecasting	Hohai University
<ul style="list-style-type: none">Constructed the <i>HHForecasting</i> 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 [9], fatigue detection [10], and scanning image-based COVID-19 diagnosis [11,12].
- 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)**
- [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](#)
Journal of Computer Science and Technology, JCST, (SCI, IF: 1.871, CCF-B) 2022.
- [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)
- [6] **Delong Chen**.
[Music-driven Conducting Motion Generation based on Motion Decomposition and Self-supervised Cross-modal Perceptual Loss](#) (基于动态频域分解与跨模态感知的乐队指挥动作生成)
Outstanding Graduation Thesis of Hohai University, *First-Class Outstanding Graduation 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)
- [8] **Delong Chen**, Ruizhi Zhou, Yanling Pan, Fan Liu.
[A Simple Baseline for Adversarial Domain Adaptation-based Unsupervised Flood Forecasting](#)
Technical Report, ArXiv, 2022.

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, 2022. (SCI, IF: 9.588)
- [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 submission, minor revision. (SCI, IF: 7.802)
- [11] 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, 2022. (SCI, IF: 2.838)
- [12] **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.

Other Topics

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

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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
河海大学优秀本科毕业生 (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, 以减少 4 倍训练量在下游性能达到与 CLIP 相当的性能 ([paper](#), [code](#)).
- 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 LITL@IJCAI'21 Best Dataset Paper ([paper](#), [dataset](#)).
- 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 M²S-GAN ([paper](#), [Turing test video](#)).
- 基于 M²S-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([paper](#), [Demo video](#)).
- 在研项目: 基于掩码自编码器 (MAE) 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*, 实现了包括 Linear Regression, SVR, LSTM, TCN, STGCN 等 12 种机器学习/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 ([paper](#)).
- 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 ([paper](#)).

➤ 其它项目

- 完成关于深度单样本人脸识别[9], 疲劳驾驶检测[10], 基于扫描图像的新冠肺炎自动诊断[11,12]的

综述论文。

- 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.

➤ 个人荣誉与竞赛奖项

- 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（全国学联二十七次）代表。
- 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。
- 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](#)
ArXiv, submitted to a top-tier conference.
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音乐与动作

- [4] Fan Liu, **Delong Chen** (corresponding author), et al.
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- [6] **Delong Chen**.
《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.
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2021 4th International Conference on Big Data and Artificial Intelligence, BDAI'21. (Best Presentation)
- [8] **Delong Chen**, Ruizhi Zhou, Yanling Pan, Fan Liu.
[A Simple Baseline for Adversarial Domain Adaptation-based Unsupervised Flood Forecasting](#)
Technical Report, ArXiv, 2022.

综述论文

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- [12] **Delong Chen**, Shunhui Ji, Fan Liu, et al.
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其它

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