Cheng CHEN

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EDUCATION

Imperial College London (IC) | London, UK   09/2025-09/2026 (Expected)
M.S., Applied Computational Science and Engineering
Key Courses: Applied Computation, Data Science and Machine Learning, Modelling and Numerical Methods, Inversion and Optimization, Parallel Programming, etc.

Donghua University (DHU) | Shanghai, China   09/2021-06/2025
B.S., Data Science and Big Data Technology   **GPA:** 90.1/100   Shanghai, China
Key Courses: Deep Learning, Algorithom and Data Structures, Calculus, Linear Algebra, Probability and Mathematical Statistics, etc.

INTERNSHIP

Artificial Intelligence Quantitative Research Lab | Shanghai, China   02/2025-08/2025
AI Intern, Research Leader
- Designed and validated a highly integrated Multi-Agent Financial Model, with strategies covering diverse assets including China market futures, options, cryptocurrencies, and stocks, effectively enhancing portfolio risk dispersion and alpha generation in complex markets
- Fine-tuned diverse language models to perform financial semantic quantification for sector classification, topic modeling and net sentiment analysis on Multi-Source text
- Developed a Heterogeneous Information Fusion Engine utilizing an Attention Mechanism (KQ Module), integrating news, search behavior, and social media into the prediction system to enhance market sentiment capture and improve prediction accuracy and robustness
- Led the development and high-level encapsulation of a Multi-Agent Framework, Data Pipeline, Visualization, and Backtesting system, creating unified, modular interfaces that significantly accelerated the strategy iteration speed from concept to live trading
- Designed and trained an AI Classification Model based on Classical Wave Theory to precisely identify all five impulse waves and three correction waves in K-line charts, successfully establishing a structured, high-win-rate trading strategy
- Integrated a tail-risk indicator (VIX spillover intensity) to implement real-time, dynamic weight adjustments for the Minimum Connectedness Portfolio (MCP)
- Conducted research on Adaptive VWAP Multi-Scale Order Splitting Strategies and Automated Feature Factor Screening, optimizing large-scale order execution and feature selection

Institute of Computing Technology, Chinese Academy of Science | Beijing, China   08/2024-01/2025
AI Intern, Research Assistant
- Contributed deeply to the training and fine-tuning of Visual-Language Models (VLM), successfully deploying features such as Image-Text Description, High-Precision Object Detection, and Multi-Turn Visual Q&A in multiple systems
- Reproduced and optimized state-of-the-art Super-Resolution Imaging Technology, achieving multi-dimensional ultra-heterogeneous image alignment and denoising for multi-spectral low-resolution images
- Utilized CLIP and Multi-Classification Models to achieve Cross-Domain Matching and Label Association for physical objects across multi-source, multi-resolution remote sensing images, significantly improving data utilization efficiency
- Enabled satellites to adaptively enhance imaging resolution under complex observation conditions, achieving the image quality standard required for critical business decision-making
- Developed an End-to-End Network integrating Edge Enhancement, Super-Resolution Generative Adversarial Networks (SR-GANs), and Object Detection to significantly improve terminal object detection performance
- Designed and experimented with advanced fusion modules, including Transformer Encoders and 3D Convolution, for Multi-Source Ordered Remote Sensing Data Streams, establishing a systematic data feedback mechanism to enhance feature capture ability
- Constructed a large-scale, high-quality Image-Text Pair Dataset for Satellite Remote Sensing Visual-Language Model (VLM) training, sourced from high-noise, multi-semantic, and unstructured natural language files

RESEARCH EXPERIENCE

Visual Enhanced 2.5D 3D Image Deep Learning Segmentation Algorithm Mechanisms | Research Leader   08/2023-12/2023
1st Place in Model Metrics in Shanghai AI Lab DIMTAIC 2023 Segmentation Competition
Invited Participant at the **2023 Health China Sinan Summit**

- Proposed a Visual Enhanced Perception Mechanism for 3D colorectal tumor CT images, which models long-range global pixel dependencies and multi-scale local texture information using a dynamic gating structure Proposed a novel visual enhancement perception mechanism that collaboratively models long-range global pixel dependencies and multi-scale local texture information, introducing a dynamic gating structure for adaptive information scheduling to boost feature representation across different scales in medical images.
- Introduced an improved 2.5D data structure based on cross-sectional stacking and a channel attention mechanism to reinforce the acquisition and weighting of information along the longitudinal (Z) dimension, achieving lightweight, high-semantic spatial expression while significantly reducing computational cost

Multi-modal Solution: Deepfake Detection and the Source Identification │ Co-first Author   07/2023-10/2023
Supervisor: Prof. David Woodruff, CMU School of Computer Science
- Co-developed a Multi-Modal Deepfake Detection and Identity Authentication Framework, integrating a Cross-Modal Attention Mechanism, Face Recognition, Audio Feature Engineering, and Physical Anomaly Features
- Achieved a significant enhancement in detection accuracy and system robustness against high-fidelity deepfakes by deeply integrating visual, audio, and text features

Relevant Publication:Zheng, Y., **Chen, C.***, Zhou, Xu., & Hu, J. (Co-first Author). Multi-Modal Solution: Deepfake Detection and the Source Identification. PMBDA 2023. https://doi.org/10.4108/eai.15-12-2023.2345299

SELECTED PROJECTS

Online Education Big Data Analysis Platform with Integrated Specialized LLM │ Group Leader   02/2024-05/2024
Award: National Second Prize in the Chinese Collegiate Computing Competition (4C) and **First Prize** in the Shanghai Collegiate Application Technology Competition (Enterprise Cooperation Track).
- Developed a Text2SQL Large Model to convert natural language queries into structured SQL for querying large-scale educational data, enabling real-time visualization and reporting
- Implemented a Retrieval-Augmented Generation (RAG) system using OpenAI Whisper and a vector database for classroom content, enhancing model reliability and mitigating hallucinations by returning verifiable reference paragraphs
- Integrated, trained, and deployed a ChatGLM3-6B large language model as a conversational assistant for students and teachers
- Leveraged Hadoop and Spark for large-scale data processing and aggregation, enhancing the educational institution's real-time monitoring and resource allocation capabilities

Automatic Annotation System for Cervical Liquid-based Pathology Images │ Group Leader   03/2023-06/2024
Awarded: National-Level project in the Undergraduate Innovation and Entrepreneurship Program
- Developed a mplemented cervical cell detection using Deformable Convolution for irregular contour feature extraction and a Spatial Attention Mechanism to enhance feature representation in a single domain
- Applied LORA fine-tuning to a LLaMA model (after Chinese vocabulary expansion and general text pre-training) using Chinese and English medical datasets, and deployed the medical assistant to a website
- Integrated Image-Level and Category-Level Domain Adaptation Networks (DAN) to align feature distributions across source and target domains through adversarial learning, solving the domain shift problem between different hospitals

3D Gaussian Splatting for Visual Computing   02/2024-05/2023
- Implemented the 3D Gaussian Splatting (3DGS) algorithm for applications such as novel view synthesis, SLAM, and pose estimation
- Developed a 3D simulated physical engine for object collision

LinkMemo: Graph-based Vocabulary Learning System   02/2023-04/2023
Secured National Copyright Administration Software Copyright
- Developed and deployed a comprehensive vocabulary learning website integrating Spring Boot, Vue.js, and Neo4j to manage and present complex word associations via a knowledge graph
- and implemented a customizable learning path feature to maximize user engagement and educational efficacy

PROFESSIONAL SKILLS

Programming: Python, JAVA, C++	**Deep Learning Frameworks:** Pytorch, TensorFlow
Big Data Technologies: Hadoop, Spark	**Database Operations:** SQL, Dameng Assistant Engineer (DAE)
Other: Linux system operation, Docker operation	