

## Zhen Yang

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### EDUCATIONAL BACKGROUND

#### Nanjing University of Posts and Telecommunications

*Bachelor of Science in Data Science and Big Data Technology*

**GPA:** 3.82/4.0    **GRE:** V166+Q170+3.5

**Courses:** Natural Language Processing (99), Advanced Programming Language Design (98), Computer Vision (95), Artificial Intelligence (95), Algorithm Analysis and Design (94), Software Testing(98)

#### University of Cambridge

*Pathfinder Program(Outstanding graduate)*

**Course:** Artificial Intelligence

**Honors:** Silver Medal in USACO (United States Computer Olympiad, 2025), Outstanding Student and First-Class Scholarship (2023), First Prize in the National Software and Information Technology Professional Talent Competition-Jiangsu Division (2024, 2023)

Cambridge, UK

Aug. 2023

Nanjing, China

Sept. 2022 - June. 2026

### INTERNSHIP EXPERIENCE

#### HONOR - Algorithm Intern

May. 2025 -Oct. 2025

- Conducted GEO (Generative Engine Optimization) for the Honor 400 Pro/Magic V5 products.
- Pushed 67 GEO articles on 13 medias, achieving an AI visibility rate of over 70% for 14 core Prompts within 6 hours
- Innovatively modeled the networking search recommendation mechanism of mainstream AI engines as a two-stage "content-user Query" matching system, reversely analyzed its core feature weights (such as BM25, LDA, semantic similarity, etc.), formulated precise GEO strategies based on feature weight analysis
- Developed a Python automation script from scratch, built an end-to-end GEO promotional material generation pipeline, and designed a "reflection-iteration" mechanism to eliminate semantic illusions. Compared to traditional brand promotional materials, the annual cost savings are approximately 4 million yuan, and subsequent optimizations have reduced the generation time of promotional materials by 40%
- Utilized LoRA and contrastive learning to fine-tune the DeepSeek-8B model, simulated its online search behavior for literature relevance evaluation, and construct a professional dataset, providing key data support for the prior evaluation and optimization of GEO strategies

#### Bosch - Algorithm Intern

July. 2024 - Dec. 2024

- Cleaned and analyzed historical data of Ethernet projects using Python, designed rule-based automated decision-making algorithms, and implemented a gateway intelligent system that covered most scenarios to reduce system error rates
- Implemented the iterative upgrade of the Gateway tool module independently, designed core parsing algorithms to automatically generate C++ communication protocol parsing code, built an automated testing framework to verify the correctness of the generated code, and achieved full-chain automation from requirement documents to executable code
- Completed the Python implementation and integration of RTP, RTSP, and RTCP communication protocols independently, ensuring the stability and efficiency of the communication link
- Further optimized the lightweight Google Protocol Buffer library, completed automated test coverage, addressed edge case issues, and increased the accuracy of the library from 98.4% to 100%
- Utilized Python visualization tools (such as Matplotlib and Seaborn) to analyze actual scenario data, providing data support for performance tuning
- Conducted an in-depth study on the IEEE1588 standard and gPTP protocol, and implemented them in Python

#### Industrial and Commercial Bank of China. - Algorithm Intern

Jan. 2024 - Feb. 2024

- Skillfully used Python to write efficient scripts, processed Excel data, and completed the sorting, integration, and cleaning of customer data, ensuring the accuracy and integrity of the data
- Performed pre-processing on the data, including data cleaning, feature engineering, etc., to effectively enhance the quality of model inputs
- Integrated customer data from different business systems and external data sources, identified and corrected inconsistent data formats, established standardized data processing procedures for data consistency and availability
- Designed an intelligent loan issuance assessment model based on machine learning algorithms (KNN, Naive Bayes, MLP) which reached an accuracy rate of 72%
- Developed an LSTM-Transformer integrated time series prediction model, achieving an AUC of 89% on three months of behavioral data, and identifying 85% of high-risk customers two weeks in advance

### PROJECT EXPERIENCE

#### Bi-level Meta-Policy Control for Dynamic Uncertainty Calibration in Evidential Deep Learning Feb 2025 - May 2025

*Director*

- Wrote all the code based on the PyTorch framework, and designed and implemented all the experiments
- Introduced meta-learning into evidence deep learning for the first time, proposed a state-aware policy network that optimized the dynamic adjustment of KL regularization coefficient and adaptive Dirichlet prior through dual time scales, thoroughly solving the imbalance between accuracy and uncertainty estimation capability in evidence learning
- Proposed a learnable Dirichlet prior to replace the traditional fixed uniform prior, theoretically proved the upper bound

- of the cumulative regret of MPC, ensuring stable convergence of policy optimization
- The proposed framework MPC had become a general framework for evidence-based deep learning, achieving state-of-the-art performance in high-risk scenarios such as classification, medical image segmentation, and OOD sample detection (ACC increased by 12.1%, MUE decreased by 24.7%)
- Finished the paper *Bi-level Meta-Policy Control for Dynamic Uncertainty Calibration in Evidential Deep Learning* (under submission to AAAI2026, first author)

#### **Research on Trustworthy Medical Image Segmentation Methods for Uncertainty Perception** Feb. 2025 - May. 2025

##### *Director*

- Progressive Evidence Uncertainty-Guided Attention Mechanism (PEUA): It gradually optimizes the attention distribution based on an uncertainty map and reduces noise in attention weights through low-rank learning, significantly enhancing the feature representation ability in difficult regions
- Semantic-preserving Evidence Learning Strategy (SAEL): It proposes a semantic smoothing evidence generator and a fidelity-enhancing regularization term, effectively avoiding the loss of key semantic information in ambiguous regions and improving the semantic consistency of segmentation
- Proposed the Evidential U-KAN model, compared it with current mainstream methods, and found that it demonstrated significant advantages in both accuracy and reliability
- Patent: "Trustworthy Medical Image Segmentation Method and Device Guided by Gradual Evidence Uncertainty"
- Paper: *Evidential U-KAN for Trustworthy Medical Image Segmentation* (under submission to MedIA, first author)

#### **Intelligent Prediction of Sea Surface Temperature and Marine Heatwave Risk Analysis** May. 2024 - Aug. 2024

##### *Director*

- Served as the project leader, built a Transformer-based Crossformer model for ocean temperature prediction, achieving state-of-the-art (SOTA) performance in ocean temperature prediction
- Visualized the result data through Python scripts and combined it with diffusion models for the first time to analyze marine heatwaves
- Discovered the impact of land on prediction through mathematical modeling analysis of the results, and proposed edge distillation (a pioneering approach) to address this issue, further enhancing prediction accuracy
- The final result report will be submitted to the "Second Institute of Oceanography, Ministry of Natural Resources" to support its subsequent research on ocean temperature

#### **Method for Analyzing and Structurally Outputting Secondary Wiring Diagrams of Substations** Sept. 2023 - Mar. 2024

##### *Technical Lead*

- Constructed and implemented a method for analyzing and structurally outputting secondary wiring diagrams of substations based on YOLOv5 and OCR
- Utilized Python scripting and algorithmic concepts such as DFS and BFS to develop core pathfinding algorithms, and iteratively optimized the algorithms to achieve significant speed improvements
- Put forward optimization plans in the subsequent stages to ultimately meet the target requirements through further optimizing the post-processing module, fixing bugs, and improving the prediction accuracy from 68.2% to 91.4%
- Completed the writing of relevant documents, communicated with the client for more than 3 times, continuously confirmed and updated the client's new project requirements

#### **Early Heart Disease Prediction Based on KNN**

June. 2023 - Sept. 2023

##### *Director*

- Built an early heart disease prediction system that relied less on professional data
- It revealed that KNN performed the best after comparing various machine learning models such as KNN, Naive Bayes, Decision Tree, XGBoost, and MLP for data mining
- Screened 17 feature dimensions using Pearson correlation coefficient and data specialization level, visualized the results with Python, and the final prediction accuracy reached 92.1%
- First author of the paper *Early Heart Disease Diagnosis Method based on KNN* (published in CSCI 2023, ISSN: 2791-0210)

## **LEADERSHIP EXPERIENCE**

### **Leader of the School Debate Team/Vice President of the School Debate Club/Leader of the College Debate**

#### *Team leader/Vice President*

Dec. 2023 - Dec. 2024

- Led the school team to participate in external competitions, organized internal debate competitions, college-level competitions, debate promotion/lectures
- Won Champion of the "Chaoxing Cup" Debate Competition, Second Prize in the "Imprint of the Taihu Lake" National
- Competed in Cyberspace Security Debate Competition for University Students, and won Champion of the First "Integrity Cup" Debate Competition

## **SKILLS**

**Skills:** Python, C++, Pytorch; PyTorch; Large Language Models (Transformer, LoRA), Computer Vision, Evidential Deep Learning, Recommendation Systems (GEO), Reinforcement Learning (PPO, DQN)