

## EDUCATION

---

University of California, Los Angeles (UCLA)

Sep.2024-Now

✧ Major: Electrical and Computer Engineering (MS)

✧ GPA: 4.0/4

University of Science and Technology Beijing (USTB)

Sep.2020-Jun.2024

✧ Major: Computer Science (BS)

✧ GPA: 3.92/4 (Top 3/278)

## PUBLICATION

---

**Junyi Zhang, Chang Liu, Chun Yang\*, SAN: Structure-Aware Network for Complex and Long-tailed Chinese Text Recognition**, 17th International Conference on Document Analysis and Recognition (ICDAR 2023), published.

## RESEARCH EXPERIENCE

---

► **National Laboratory of Pattern Recognition (NLPR),  
Institute of Automation, Chinese Academy of Sciences**

Feb.2023-Sep.2023

Research Topic:

**Docking Based on Protein Binding Pockets Similarity**

Academic Supervisor: *Prof. Shu Wu, Prof. Qiang Liu*

- ✧ Related fields: **AI4Science, Data Mining, Geometric Deep Learning, Diffusion Model**
- ✧ Incorporated similarity information of protein binding pockets into the molecular docking model, enabling transfer learning on diverse docking datasets, thereby enhancing model robustness and improving docking performance.
- ✧ Developed a modeling framework to extract similarity information from protein binding pockets. Proposed a heterogeneous graph representation comprising three types of nodes: molecule, motif, and subpocket, and employed graph neural networks to extract and process information from the graph.

► **Pattern Recognition and AI Technology Innovation Lab  
University of Science and Technology Beijing**

May 2022-Jan.2023

Research Topic:

**SAN: Structure-Aware Network for Complex and Long-tailed Chinese Text Recognition**

Academic Supervisor: *Prof. Xucheng Yin, Prof. Chun Yang*

- ✧ Related fields: **Optical Character Recognition (OCR), CV, NLP**
- ✧ Proposed a Structure-Aware Network (SAN) for complex and long-tailed character recognition by utilizing the hierarchical components information of the character.
- ✧ Auxiliary Radical Branch (ARB) based on the tree modeling of the label is introduced, which enhances the structure awareness of visual features.
- ✧ Proposed a novel TreeSim method to measure the similarity of two characters, and propose a TreeSim-based weighting mechanism for ARB to further utilize the depth information in the hierarchical representation.
- ✧ Our code has been open-sourced on GitHub. GitHub URL: <https://github.com/Levi-ZJY/SAN>

## SCHOLARSHIP

---

- ✧ National Scholarship of China (Awarded to 0.2% of students nationwide)
- ✧ Champion's Scholarship (Top 1 in CS department)
- ✧ University-Level First-Class Scholarship

## SKILLS

---

- ✧ Proficient: Python, PyTorch, C, C++
- ✧ Familiar: Java, JavaScript, Verilog, Assembly, HTML

## COMPETITIONS

---

### ► National AI Board Game Tournament

**National 2<sup>nd</sup> Prize**

Jul.2022-Aug.2022

- ✧ Developed a PyTorch-based program for the board game EinStein würfelt nicht, utilizing reinforcement learning principles and the Monte Carlo Tree Search (MCTS) algorithm
- ✧ Built and optimized a deep learning model to predict action probability distributions and value functions, addressing challenges such as slow computation speed and floating-point overflow.

### ► MCM/ICM

**Honorable Mention**

Feb.2022-Mar.2022

- ✧ Developed a forest management model to enhance carbon sequestration, leveraging logistic growth theory, differential equations, and advanced fitting techniques.
- ✧ Applied the model to the Greater Khingan Mountains, optimizing forest harvesting schedules using data-driven analysis and the Particle Swarm Optimization algorithm.

### ► Mathematics Competition of Chinese College Students

**1<sup>st</sup> Prize in Beijing**

Dec.2021

- ✧ Included advanced problems in higher mathematics, linear algebra, and probability theory, designed to test contestants' mathematical thinking abilities and depth of understanding.

### ► Physics Competition of Chinese College Students

**1<sup>st</sup> Prize in Beijing**

Nov.2021

- ✧ Included advanced problems in mechanics, thermodynamics, electromagnetism, optics, and relativity, designed to evaluate contestants' ability to analyze physical problems and apply mathematical modeling and computational skills.

### ► RoboCup

**1<sup>st</sup> Prize**

May 2021-Jul.2021

- ✧ Implemented automatic control for the NAO robot using C++, integrating image data from robot vision and motion information from multiple sensors.

### ► Microcontroller Application Competition

**3<sup>rd</sup> Prize**

Apr.2021-May 2021

- ✧ Developed an electric fan control system using C language and STM32 microcontroller. Integrated temperature and humidity sensors, human infrared sensors, and implemented advanced features leveraging external interrupts, PWM, and SPI communication.