

EDUCATION

University of California, Los Angeles (UCLA)

Sep.2024-Now

✧ Major: Electrical and Computer Engineering (MS)

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),

Feb.2023-Sep.2023

Institute of Automation, Chinese Academy of Science (CASIA)

Research Topic:

Docking Based on Protein Binding Pockets Similarity

Academic Supervisor: Prof. Liang Wang, Assoc. Prof. Shu Wu

- ✧ Related fields: AI4Science, Data Mining, Graph Neural Networks, Diffusion Model
- ✧ Introduced similarity information between different protein binding pockets into the molecular docking model, enabling the model to carry out transfer learning across different docking data, thereby enhancing the robustness of the model and improving its performance.
- ✧ Designed a modeling scheme to extract similarity information from protein binding pockets. Proposed constructing a heterogeneous graph containing three types of nodes: molecule, motif, and subpocket, and leveraged graph neural networks to extract information from this heterogeneous graph.

► Pattern Recognition and AI Technology Innovation Lab

May 2022-Jan.2023

University of Science and Technology Beijing (USTB)

Research Topic:

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

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

- ✧ Related fields: Computer Vision, Optical Character Recognition (OCR)
- ✧ 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. ARB shows promising improvement in complex character and long-tailed character recognition and it also improves the overall recognition accuracy of Chinese text.
- ✧ Propose 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 at the University of Science and Technology Beijing (Top 1)
- ✧ University-Level First-Class Scholarship

Skills

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

Contest

► National AI Board Game Tournament

National 2nd Prize

Jul.2022-Aug.2022

- ✧ Used PyTorch, reinforcement learning principles, and the Monte Carlo Tree Search (MCTS) algorithm to develop a program for the board game EinStein würfelt nicht.
- ✧ Constructed a deep learning model to predict the probability distribution of actions corresponding to the current state and value function, and optimized the model algorithm to solve problems including slow computation speed and floating-point overflow.

► MCM/ICM

Honorable Mention

Feb.2022-Mar.2022

- ✧ Developed a forest management model for increased carbon sequestration, using logistic theoretical growth equations, differential equations, and fitting functions.
- ✧ Applied the model to the Greater Khingan Mountains, utilizing data and Particle Swarm Optimization Algorithm to determine optimal forest harvesting schedules.

► Mathematics Competition of Chinese College Students

1st Prize in Beijing

Dec.2021

- ✧ Involved advanced problems in higher mathematics, linear algebra, and probability theory, testing the contestants' mathematical thinking abilities and depth of problem understanding.

► Physics Competition of Chinese College Students

1st Prize in Beijing

Nov.2021

- ✧ Involved advanced problems in mechanics, thermodynamics, electromagnetism, optics, relativity, etc., testing the contestants' ability to analyze physical problems as well as skills in mathematical modeling and computation.

► RoboCup

1st Prize

May 2021-Jul.2021

- ✧ Based on C++, used image information collected from robot vision and motion information gathered from various sensors to implement automatic control of the NAO robot.

► Microcontroller Application Competition

3rd Prize

Apr.2021-May 2021

- ✧ Utilized C language and based on the STM32 microcontroller, built an electric fan control system. Integrated sensors such as temperature and humidity sensors, human infrared sensors, and implemented multiple additional functions through technologies like external interruptions, PWM waves, and SPI communication.