

Shirou Jing

Tel: +1 3417669064, Email: shirou_sav@berkeley.edu

EDUCATION

University of Chinese Academy of Sciences(UCAS), Beijing, China

24/08/2021-30/06/2025

Bachelor's Degree in Computer Science

GPA: 3.87/4

Core Courses: Data Structure(4.0), Introduction to Theory of Computation(3.9), Human-Computer Interaction(4.0), Digital Circuits (4.0)

University of California, Berkeley

01/2024-now

Exchange Student in Computer Science

GPA: 4.0/4

Core Courses: CS 188: Introduction to Artificial Intelligence(4.0), CS 170: Efficient Algorithms and Intractable Problems (top 3% A)

PUBLICATIONS

[1] Kang Liu, Zuzheng Kuang, Shirou Jing, Haixia Bi*, Yaochen Li, Chen Xu. DIFFUSION-BASED GENERATIVE SELF-SUPERVISED MODEL FOR FEW-SHOT POLSAR IMAGE CLASSIFICATION. *IGARSS(IEEE International Geoscience and Remote Sensing Symposium)* (2024) (Published)

[2] Shirou Jing, Xuejin Wu, Wei Sun. GIGT: Gesture-Recognition-Integrated Game Therapy for Tenosynovitis. *IPCV*. (Accepted) (Accepting rate 19%~21%)

RESEARCH EXPERIENCES

Development of AI-driven High-resolution Cell Dynamic Imaging System

15/04/2024-10/2024

Summer Research Project in Advanced Bioimaging Center of UC Berkeley (the lab's co-founder is Nobel Prize winner Eric Betzig <https://abc.berkeley.edu/team/>)

Research Assistant | Advisor: Dr. Xiongtao Ruan, Dr. Gokul upadhyayula

- Finished complete cell recognition by through using the latest confocal optical microscopy built by ABC lab, obtaining images of cell samples and identifying mitosis cells in these cells; segmented the cells in the image patch generated by the microscope containing 500-1000 cells to obtain a single cell image that is not overlapping, and then classified the image to find the cell that is dividing
- Designed faster cell recognition models with high recognition accuracy at early stage based on swin-Transformer
- Implemented the designed pipeline's recognition, segmentation and classification on confocal microscope in the laboratory to obtain an AI-driven high-resolution cell dynamic imaging system, where subsequent biological experiments were carried out.

High Interframe Consistency Video Generation Based on Diffusion Model

11/2023-04/2025

Beijing Natural Science Foundation Project (Notes: Under the guidance of the National Foundation of China, the project is the first open research program for senior undergraduate scientific research pilot projects, only for Tsinghua University, Peking University and University of Chinese Academy of Sciences. A total of 200 projects are funded to encourage outstanding undergraduates to enter the scientific research, and the application is very difficult, with an acceptance rate of only 12.5%.)

Director | Advisor: Dr. Zhenliang He, Dr. Shiguang Shan

- Investigated the progress of diffusion models and video generation model and determined the control scheme for video generation based on current research results and its prospect through collecting information both extensively and intensively, local deployment and replication.

- Designed the video generation model and maintained character consistency, inter-frame consistency and semantic coherence.
- Completed the Python and subsequent code about module adjustments, and wrote papers and applied patents
- Developed Github, an open source platform to benefit users of personalized video generation products, and more subsequent researchers exploring plug-and-play video generation solutions, and researchers with limited training resources (since the solution does not require researchers using the framework to retrain the model).

Interactive Tenosynovitis Prevention Scheme Based on Deep Learning

10/2023-03/2024

Director | Advisor: Dr. Sun Wei, Dr. Feng Tian

- Shot a specific video data set of tenosynovitis relief gestures involved in exercising the action of the tendon sheath of the different joints of the hand, processed and enhanced all the data by employing Yolov5 to extract 21 key points of the hand with data augmentation using random rotation, scaling, noise, video frame swapping, video frame deletion, etc.
- Developed, identified and classified LSTM network, achieving 96.68% accuracy based on principle of long and short memory.
- Design an interactive game interface like pushing the box with five gestures, allowing the user to freely adjust the proportional distribution of the joints they wish to exercise, and matched the game module with the identification module based on the principle of user friendliness.
- Wrote report and revised papers on Gesture-Recognition-Integrated Game Therapy for Tenosynovitis.

Classification of Polarimetric SAR Images with a Few Samples Based on Diffusion Model

06/2023-09/2023

Research Assistant | Advisor: Dr. Haixia Bi

- Investigated the basic articles of diffusion model adopting the research method from the whole to the part to determine the most appropriate model to handle classification downstream tasks, and knew the basic Unet architecture and Transformer architecture
- Designed features self-supervised from diffusion model and extracted the interface code structure between modules based on DDPM (denoising diffusion probabilistic models) and ViT(Vision Transformer) classify modules with the actual effect 13.9% higher than the original accuracy when using models such as CNN, and about 3.6% higher than the original Sota.
- Conducted comparative experiments to prove the feasibility and superiority of the diffusion model scheme in the case of the same data set NASA/JPL ARISAR and computing resource 4*A100
- Wrote one paper on remote sensing published on IGARSS2024

CPU Architecture Design Based on Loong Arch

02/2023-12/2023

Researcher | Advisor: Dr. Wenxiang Wang, Dr. Weiwu Hu

- Developed single-cycle cpu based on the given Loong Arch32 instruction set and adjusted it to pipeline CPU
- Designed and added forward and blocking mechanism to solve relevant data hazard like RAW and WAR, and control hazard
- Designed and added exception handling module, TLB module cache, and hardware deep learning module to improve cpu capability
- Designed according to customized external storage and assembly line coordination to solve the external storage problem and implemented DMA bus and AXI bus module, and transplanted the results of XV6 operating system to the cpu

PROFESSIONAL EXPERIENCES

ZhenTec Technology, Shanxi, China

07/2022-08/2022

Summer Intern | Advisor: Dr. Haochong Wang

- Participated in the development and testing of lower limb rehabilitation robots and training vehicles supported by brain-computer interface technology
- Designed interactive training games like racing and shooting for lower limb rehabilitation using brain-computer interface to transmit the patient's brain signal and adopting complex algorithms to analyze the patient's thinking, by which the patient's motion intention can be obtained and rehabilitation training can be self-supervised.
- Monitored the rehabilitation of the stroke patients or patients in the rehabilitation phase of lower extremity movement and collected 15 doctors' feedback and evaluation on the effect of patients using brain-computer interface lower limb rehabilitation training machine, including rehabilitation efficiency and whether it is easy to lead to wrong rehabilitation

SELECTED HONOURS & AWARDS

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| • Merit Student, University of Chinese Academy of Sciences | 06/2023 & 06/2022 |
| • Third-class Academic Scholarship, University of Chinese Academy of Sciences | 10/2023 & 10/2022 |

ACADEMIC SKILLS

- Experienced in coding: python, C/C++, Verilog, go, java, LaTeX, etc.
- Experienced in software: github, overleaf, google docs, etc

LANGUAGE & ACADEMIC ABILITIES

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| • TOEFL: overall 92 (Reading 26, Listening 25, Speaking 19, Writing 22) | 09/08/2023 |
| • GRE: 323 | 24/04/2023 |