Cheng Li

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MPhil & PhD Student

EDUCATION

Macau University of Science and Technology Sep 2020 - Jun 2024

Computer Science Bachelor of Science

GPA：3.83/4.00 WES GPA (USA Standard): 3.94/4.00

the Hong Kong University of Science and Technology Aug 2024

Research Interests: Remote Sensing & Deep Learning MPhil & PhD student

Honorary Awards (selected) ：

1. Awarded the 2024 Asian Future Leader Scholarship (AFLSP).
2. Awarded the 2020 - 2021 Dean' s Honour List in the School of Computer Science and Engineering, Macau University of Science and Technology.
3. Awarded the 2021 - 2022 Dean' s Honour List in the School of Computer Science and Engineering, Macau University of Science and Technology.
4. Awarded the 2022 - 2023 Dean' s Honour List in the School of Computer Science and Engineering, Macau University of Science and Technology.
5. Awarded the Dean' s Scholarship for 2021 - 2022 in the School of Computer Science and Engineering, Macau University of Science and Technology.
6. Awarded the Bank of China Scholarship for 2021 - 2022.
7. Awarded the Grand Prize in the annual finals of the 5th "Bei Dou Star" Innovation and Innovation Competition (Silk Road International Challenge) organized by China Satellite Navigation Association.
8. 2022 Huawei ICT Competition (Macau Cloud Circuit) was ranked among the top10 in the Macau region preliminary and won the Excellence Award in the Macau final round.
9. Second Prize in the Three Gorges University Summer Online Camp Writing Contest.

Related Courses (Selected) and Skills:

Discrete Mathematics, Numerical Computing, Linear Algebra, Calculus, Theory of Probability
Data Structures, Algorithm Design and Analysis, Computer Organization, Operating System, Database, Computer Network, Artificial Intelligence, Machine Learning, Digital Image Processing, Software Engineering and Sofware Project Management.

Programming Languages:

C, C++, python, Matlab
I have some research experiences and interests in Machine Learning, Image Processing and Remote Sensing. I also can proficiently operate some GIS and Remote Sensing software, such as ArcGIS, ENVI and ERDAS.

English skills ：

College English Test-6 (CET-6 China)
IELTS 6.5

PROJECT EXPERIENCE

Macau University of Science and Technology Aug 2021 - May 2024

Research Assistant Mentor：Prof. Xiaolin Tian

1. Fully participate in all aspects (such as coding, software design and remote sensing data processing) of the project. This project is about Lunar and Martian Mineral Content Inversion. This project uses the image processing method to process the remote sensing image data (such as CRISM data) and uses different Artificial Intelligence methods to training the data set to get the propose of mineral inversion.

2. Mainly responsible for data set preparation, remote sensing data processing and methodological investigation of the project. This project is about Analysis of the identification of typical regions of the Moon and Mars (linear structure and mud volcanoes). This project uses the imageprocessing method to process the remote sensing image data (such as MOLA data) and uses different machine learning methods to training the data set to get the propose of identify the linear structure and mud volcanoes on Mars and Moon.

Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan Jul 2023 - Sep 2023

Student Research Assistant (Remote) Mentor: Prof. Hsien Shang

The project was organized by the Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan, as a summer student project, and participated in the whole project "Exploration of Numerical Codes and Solvers in CompAS 2023", supervised by Prof. Hsien Shang, which was mainly related to the development of hydrodynamic and magnetohydrodynamic codes and solvers for astrophysical problems in CompAS. "The project was mainly related to the development of hydrodynamic and magnetohydrodynamic codes and solvers for astrophysical problems in CompAS. I am primarily responsible for exploring and validating higher order conservative finite difference methods and other methods under development as well as testing the accuracy and performance of numerical methods for HD-MHD problems.

Aerospace Information Research Institute, Chinese Academy of Sciences May 2023 - Jul 2023

Research Assistant Mentor: Prof. Zhanfeng Shen

1. Participated in the sub-project "Interpretation of all-territory elements" of Prof. Zhanfeng Shen's group in the "Third Scientific Expedition to Xinjiang", and was responsible for the remote sensing image algorithm part, participated in the identification of Xinjiang poplar and red willow on remote sensing images, and the sample data enhancement by simulating cloud algorithm. etc.

2. Mainly responsible for remote sensing image processing and the application and construction of artificial intelligence deep learning. The project is divided into three steps, combining deep learning to detect building damage targets, extract building damage areas and detect road damage points, and conduct reconstruction and evaluation of building damage based on multi-source remote sensing data.

Institute for AI Industry Research, Tsinghua University Jan 2024 - May 2024

AI Autonomous Driving Orientation Intern Mentor: Assistant Professor Hao Zhao

This program is a winter internship program at Tsinghua University. I participated in the research in the direction of automatic driving and LLM, the main research direction is the extension in the direction of Action-aware Driving Caption Transformer.

the Lab for Space Research, the University of Hong Kong Jul 2023 - Aug 2023

Research Assistant Mentor: Prof. Quentin Parker & Dr. Andreas Ritter

This project is the 2023 Summer Student Internship Program organized by LSR Laboratory of the University of Hong Kong. The project that I am involved in is about the space spectral analysis software, and I am mainly responsible for expanding the development of the application of this software using python language which has part of the functionality about images.

Zhuhai College of Science and Technology Apr 2022 - Present

Research Assistant Mentor: Dr. Cuihan Wen

Fully participate in all aspects of the project (such as remote sensing data collect and coding). This project is Guangdong Universities' Innovation Team Project, which is mainly about Artificial intelligence based classification and identification of wetlands in Zhuhai City. This project uses the image processing method to process the satelight image (such as GF- 2) to get the data set, then uses the different machine learning methods to train the data, and to reach the purpose of identify and classify.

Beijing Normal University- Hong Kong Baptist University United International College (UIC) Jun 2022 - Jan 2023

Resrach Assistant Mentor : Academician Prof. Qing-Guo Wang

Fully participate in all aspects of the project (data collect , set up methodology and coding). This project is mainly about Application of Artificial Intelligence in Investment Science. This project uses different data analysis methods to analysis the stocks, high growth fund and companies in different industry, also uses different AI methods to train the data and get the improved module in investment.

School of Earth and Space Sciences, Peking University Jul 2022 - Aug 2022

Participate Member Mentor: Prof. Xiuwan Chen

Mainly participate in data collect, methodological research. This project is a college student Innovation and Entrepreneurship Projectproject of Prof. Xiu-Wan Chen of the College of Earth and Space Sciences, Peking University, it is also a project of the 5 th "Beidou Star" Student Innovation Competition held by China Satellite Navigation Association. This project is called Multi- source data-based system for cattle pose estimation and health analysis. This project uses DCNN and Associative Embedding method to train the remote sensing video image data and realize the cattle pose estimation and health analysis.

INTERNSHIP

Aerospace Information Research Institute, Chinese Academy of Sciences May 2023 - Jul 2023

Research Assistant

As a research assistant under supervised by Prof. Zhanfeng Shen. Research Direction include: Remote Sensing Information Extraction by combining deep learning and traditional computer graphics algorithms.

Qi An Xin Technology (Macau) Group Inc (top company) Aug 2023 - Aug 2023

Network Security Engineer

Interned as a network security engineer for a month in a top cybersecurity at Macau Security Operation Center, with a focus on information security monitoring and analysis.

Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan Jul 2023 - Aug 2023

Student Research Assistant (Remote)

As a research assistant in the remote for two months under supervised by Prof. Hsien Shang. Research Direction include: Machine Learning, Fluid mechanics, numerical calculations .

the Lab for Space Research, the University of Hong Kong Jul 2023 - Aug 2023

Research Assistant

As a research assistant under supervised by Prof. Quentin Parker. Research Direction include: Spectrum Software Development.

Peking University Jul 2022 - Aug 2022

Student Teaching Assistant

Teaching Assistant of Peking University Summer School " Beidou System and Spatial and Temporal Intelligence" taught by Prof. Xiu-Wan Chen, School of Earth and Space Sciences, Peking University.

Shenzhen NanoMeasurement Trading Co., Ltd. Jul 2021 - Aug 2021

Artificial Intelligence New Technology Research Intern (Remote)

Mainly responsible for AI related new technology (measurement and control direction), product, program investigation.

Shanghai YingYi Culture Communication Co., Ltd. Jun 2021 - Jul 2021

Assistant Product Manager of "TongXue Cool" APP Intern

Complete product research, product design, product optimization, product promotion work.

SUMMER SCHOOL & COURSE

1. Participate the University of Oxford 2023 Machine Learning Summer School for researchers as well as PhD students in the direction of OXML X Health (2ECTS) and OXML (2ECTS) X Finance (online).

2. Participate in the summer school course "Beidou System and Spatial and Temporal Intelligence" at Peking University, with a final grade of A+ (95 points).
3. Participate the National University of Singapore "Artificial Intelligence and Machine Learning" summer school program in 2022 .
4. Participate in the 2022 Beijing University of Posts and Telecommunications - Macau University of Science and Technology "Summer Artificial Intelligence Training Camp".
5. Participate the HCIA- AI and HCIA- Cloud Computing courses organized by Huawei ICT Academy in Macau .
6. Participate in the "Machine Learning Cornerstone" course held online by National Taiwan University on Coursera and passed the final exam .
7. Participate in the "2022 Yangtze River Conference" organized by Three Gorges University and UNESCO in July, 2022.
8. Participate the 2021 Online Portuguese Workshop at Guangdong University of Foreign Studies in the summer of 2021.
9. Participate the online Japanese language summer school program at Toyo University in Japan and received a certificate of completion.

SCHOOL WORK & SOCIAL PRACTICE

1. Join the International Institute of Electrical and Electronics Engineers (IEEE) Student Branch at the Macau University of Science and Technology, as a Student Member of the Robotics Group.
2. Join the Remote Sensing Professional Committee of Chinese Society of Image Graphics as a Student Member.
2. In August 2021, I participated in the LG Group of Korea and the Beijing Circle Network Charity
holiday program, and went to my hometown, Nan Chang Sanlian Special Education School, and sent a piece of warmth to

the students who need help.
3. In July 2021, I participated as a volunteer in the "Chinese Language and Literature Information Management Department of the Ministry of Education World" style competition volunteer service, and won the award "excellent volunteer".
4. 2020 - 2021: Information Department of Student Union of Macau University of Science and Technology. Responsible for editing the tweets of the official public website of WeChat.
5. Participate in the Sands China Macau International 10km Run in 2021.
6. Participate in the 2022 Macau Taekwondo Championships as a member of the competition staff.

PUBLICATION

1. **Li C**, Tian Y, Tian X, Zhai Y, Cui H, Song M. Agronomy[j], An Advancing GCT-Inception-ResNet-V3 Model for Arboreal Pest Identification. (SCI JCR Q1, DOI: https://doi.org/10.3390/agronomy14040864)
2. **Li C**, Cui H, Tian X. Applied Sciences[j], A Novel CA-RegNet model for Macau Wetlands Auto Segmentation Based on GF2 Remote Sensing Images. (SCI JCR Q2, DOI: https://doi.org/10.3390/app132212178)
3. **Li C**. 2023 4th International Conference on Machine Learning and Computer Application (ICMLCA 2023), Assessing the Performance of PINN and CNN Approaches in Solving the 1D Burgers' Equation with Deep Learning Architectures. (EI-Compendex Conference, DOI: https://doi.org/10.1145/3650215.3650370)
4. **Li C**, Cui H, Tian X. Journal of Physics: Conference Series: 2023 International Conference on Big Data, Information and Intelligent Engineering, Remote Sensing Image Segmentation of Wetlands in Macau Based on Machine Learning. (EI-Compendex Conference, DOI: https://doi.org/10.1088/1742-6596/2665/1/012006)
5. **Li C**, Cui H, Tian X. Journal of Macau University of Science and Technology, Remote Sensing Image Segmentation of Macau Wetlands Based on Convolutional Neural Network. (Accepted) （澳門科技大學學報）
6. **Li C**, Song M. Journal of Sustainable Forestry[j], A Novel TAME-RegNetY Model: Enhancing Plant Pest Identification for Sustainable Environemntal Conservation. (SCI JCR Q3, Under review)
7. **Li C**, Cui H, Tian X. Doklady Earth Sciences[j], Deep Learning-based GF-2 Remote Sensing Image Segmentation 1 of Macau Wetlands. (SCI JCR Q4, Under review)
8. **Li C**, Chen S, Ma Y, Song M, Tian X, Cui H. 2024 IEEE 7th International Conference on Big data and Artificial Intelligence, Wheat Pest Identification Based on Deep Learning Techniques. (EI-Compendex Conference, Under review)
9. Chen S*, **Li C***, Ma Y*, Liang J, Zhu J, Tian X. 2024 World Congress in Computer Science, Computer Engineering, & Applied Computing (CSCE): the 28th International Conference on Image Processing, Computer Vision, & Pattern Recognition, Deep Learning Techniques for Lunar Impact Crater Identification Based on CCD and DEM Data. (*Authors contributed equally, EI-Compendex Conference, Under review)