Yilin Lyu

School of Computer and Information Systems, University of Melbourne

yilin.bio | yillyu1@student.unimelb.edu.au | +61 0478614575

EDUCATION

University of Melbourne 07/2023-Present

Master' Degree in Software Engineering

GPA: 77/100

Core Modules: Fundamentals and Applications of Molecular Simulations (100), Modelling Complex Software Systems (87), High Integrity Systems Engineering (87)

Zhengzhou University 09/2017-07/2021

Bachelor' Degree in Computer Science and Technology

GPA: 81.71/100

Academic Rank: 13 /132 (Top 10%)

Core Modules: Linear Algebra (93), Introduction to Artificial Intelligence (95), Complex Function & Integral Transform (90), Data Communication (90), Introduction to Computer Systems (90)

EXPERIENCES

Research

Approximate Conformance Checking for Business Process Modelling 06/2024-Present

- Proposed a Mamba-based method MACC, integrating Temporal Convolutional Network(TCN) for fine-grained feature extraction to capture correlations between traces, and developed a split-bucket strategy to dynamically adjust trace lengths, reducing coding sparsity in fixed-length encoding.
- Proposed an approximate conformance method that applies agglomerative hierarchical clustering techniques to preprocess event logs for constructing behavioral subsets, and conducted simulation experiments on real-world event logs, achieving higher approximate accuracy compared to benchmark methods such as k-means and k-medoids.

Predictive Business Process Monitoring with LSTM Neural Networks 06/2024-Present

- Applied Long Short-Term Memory (LSTM) neural networks as an approach to build consistently accurate models for a wide range of predictive process monitoring tasks.

Discussion of Migration of Common Neural Network Regularization Methods on SNNs 10/2023-01/2024

- Conducted a pioneering study to evaluate the effectiveness of traditional ANN dropout techniques—such as standard dropout, dropout2d, feature dropout, and alpha dropout—on the unique architecture of Spiking Neural Networks (SNNs), utilizing benchmark datasets MNIST and CIFAR-10.
- Identified key limitations of applying traditional dropout methods to SNNs and highlighted the need for developing SNN-specific regularization strategies.

Research on Cell Virtual Staining Method Based on Multiple GAN Approaches 12/2020-06/2021

- Engaged in pioneering research aimed at developing innovative virtual staining techniques for cells utilizing CycleGAN, BayesGAN, AttentionGAN and U-GAT-IT.
- Conducted extensive experiments to compare and optimize multiple GAN architectures, focusing on improving the accuracy and efficiency of virtual staining.
- Developed a improved U-GAT-IT framework for better virtual staining result.

Research of Face Recognition Based on BP Neural Network and PCA Neural Algorithm 09/2020-11/2020

- Used Matlab to realize the face recognition function based on two mainstream algorithms, explored the influence of illumination factors on the experimental results.

Industry

Information Center，Yellow River Conservancy Commission of the Ministry of Water Resources 09/2021-07/2023

Cybersecurity Fellow (Full-time)

- Responsible for the daily security management and maintenance of over 140 critical information systems, ensuring stable operation and conducting monthly security vulnerability scans and patches to eliminate potential threats.
- Optimized a network defense system covering the entire basin, including firewalls, intrusion detection systems, and antivirus software.

- Performed daily backups of critical data and established a comprehensive data recovery mechanism to restore key business data in emergencies.

Shanghai Mengchuang Shuangyang Data Technology Co., Ltd 12/2023-01/2024

Configuration Engineer (Intern)

- Managed the daily operations and maintenance of the office automation system in Shanghai's Jing'an District, including system monitoring, performance optimization, troubleshooting.
- Participated in the development of new features and optimization of the office automation system. Conducted requirement analysis, system design, coding, testing, and deployment based on user needs.

Shenzhen Zhixueyun Technology Co., Ltd 07/2020-08/2020

Operations and Maintenance Engineer (Intern)

- Responsible for the installation and deployment of various company products, including the configuration of new product launches, version updates of existing products, and feature expansions.
- Assisted in daily monitoring and troubleshooting, utilizing various monitoring tools to track system performance metrics and provided technical support.

PUBLICATIONS

Journal Articles

[1] **Y. Lyu**, "Enhancing Approximate Conformance Checking Accuracy with Hierarchical Clustering Model Behaviour Sampling," *Software and System Modeling, 2024.* **Under Review**

[2] **Y. Lyu**, "Analysis of computer remote monitoring and management system for wireless communication technology," *Digital Technology (Chinese Core Journal), vol. 5, no. 2, pp. 40-41, Sep. 2019.* **Published**

[3] **Y. Lyu**, "Application of computer science and technology in the background of the information age," *Science and Technology (Chinese Core Journal), vol. 11, no. 4, pp. 126-127, Jul. 2019* **Published**

Conference Articles

[4] **Y. Lyu**, B. Yin, "A Discussion of Migration of Common Neural Network Regularization Methods on SNNs," *Proceedings of the Ninth International Symposium on Advances in Electrical, Electronics, and Computer Engineering (ISAEECE 2024), Vol.13291, Article 132915G, Changchun, China, 2024.* DOI: https://doi.org/10.1117/12.3034448 **Published**

[5] **Y. Lyu**, "A Mamba-based approximate conformance checking method," *2024 4th International Conference on Advanced Algorithm and Neural Networks (AANN), Qingdao, China, 2024.* **Accepted**

PATENTS

[1] **Y. Lyu**, "U-GAT-IT-based Cell Virtual Staining System V1.0", *Software copyright, authorized by China Copyright Protection Center in 2021.*

[2] H. Xu, **Y. Lyu**, et.al., "Internet Procurement Management Information Platform", *Software copyright, authorized by China Copyright Protection Center in 2021.*

AWARDS & SCHOLARSHIPS

- Melbourne Global Scholars Award *(Awarded by Melbourne University)* 2024
- First-Class Scholarship for Outstanding Students *(Awarded by Zhengzhou University)* 2021
- All-Rounder Outstanding Award *(Awarded by Zhengzhou University)* 2020

ADDITIOANL INFORMATION

- **Languages:** Mandarin, English (IELTS:7.5).
- **Programming language**: Proficient in Python and Java for development and modelling.