

# Yue Liu

**E-mail:** yue.liu1@anu.edu.au

**Mobile:** +61 0405786122

**Research interest:** responsible AI, AI engineering, blockchain governance, blockchain as a service, software architecture, software engineering



## EDUCATIONAL BACKGROUND

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<b>Degree</b>	Doctor of Philosophy (2020.09 – 2024.09)
<b>University</b>	University of New South Wales
<b>Major</b>	Computer Science and Engineering
<b>Supervisors</b>	Dr. Liming Zhu, Dr. Qinghua Lu, Dr. Hye-Young Paik
<b>Degree</b>	Master of Engineering by Research (2017.09 – 2020.06)
<b>University</b>	China University of Petroleum (East China)
<b>Major</b>	Software Engineering
<b>Degree</b>	Bachelor (2013.09 - 2017.06)
<b>University</b>	China University of Petroleum (East China)
<b>Major</b>	Computer Science and Technology; English (double major)

## AWARDS AND DISTINCTIONS

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1. “Early Career in Science Award”, Data61 Software & Computational Systems, 2024.
2. “University International Postgraduate Award”, University of New South Wales, 2020-2024.

## EXPERIENCE

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1. Research Fellow (03/2025 to present, **Australian National University**)
  - Conduct research on artificial intelligence, machine learning, and natural language processing in HSE.
2. Research Engineer (09/2023 to 03/2025, **CSIRO’s Data61**)
  - Technical lead for the Data Bill of Materials project collaborated with CSIRO IM&T department.
  - Lead RAI pattern catalogue mapping to the EU AI Act, ISO 42001 standard, and Australia Voluntary AI Safety standard draft with Australia National AI Centre.
  - Propose an architectural pattern catalogue for foundation model-based agents.

- Propose an architecture design and analyse design decision trade-offs for a tax copilot collaborating with Empathetic AI.
  - Co-contributions to the ESG-AI framework development collaborating with Alphinity.
3. Research Technician (07/2022 to 09/2023, **CSIRO's Data61**)
    - Conduct multivocal literature review for risk assessment for Responsible AI.
    - Refine metrics for AI risk assessment.
  4. Teaching Assistant (05/2021 to 08/2021, **University of New South Wales**)
    - Work as a tutor for Blockchain Software Architecture course with ~100 students at undergrad/postgrad levels.
    - Teach weekly 2-hour tutorials.
    - Mentor 20 groups of students on blockchain projects.

**PUBLICATION** (No. of paper: 37, citations: 1747, h-index: 17)

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#### **AI / Agent Engineering**

1. **Liu, Y.**, Lo, S. K., Lu, Q., Zhu, L., Zhao, D., Xu, X., ... & Whittle, J. (2025). Agent design pattern catalogue: A collection of architectural patterns for foundation model based agents. *Journal of Systems and Software*, 220, 112278.
2. Lu, Q., Zhu, L., Xu, X., **Liu, Y.**, Xing, Z., & Whittle, J. (2024). A taxonomy of foundation model based systems through the lens of software architecture. In *Proceedings of the IEEE/ACM 3rd International Conference on AI Engineering-Software Engineering for AI* (pp. 1-6).
3. Fang, Z., Yuan, Y., Zhang, J., **Liu, Y.**, Mu, Y., Lu, Q., Xu, X., Wang, J., Wang, C., Zhang, S., & Chen, S. (2023). MLOps Spanning Whole Machine Learning Life Cycle: A Survey. *arXiv preprint arXiv:2304.07296*.

#### **Responsible AI / AI Safety**

4. **Liu, Y.**, Lu, Q., Zhu, L., & Paik, H. Y. (2024). Decentralised governance for foundation model based ai systems: Exploring the role of blockchain in responsible AI. *IEEE Software*.
5. Lo, S. K., **Liu, Y.**, Lu, Q., Wang, C., Xu, X., Paik, H. Y., & Zhu, L. (2022). Toward trustworthy AI: Blockchain-based architecture design for accountability and fairness of federated learning systems. *IEEE Internet of Things Journal*, 10(4), 3276-3284.
6. Lee, S. U., Perera, H., **Liu, Y.**, Xia, B., Lu, Q., & Zhu, L. (2024). Integrating ESG and AI: A Comprehensive Responsible AI Assessment Framework. *arXiv preprint arXiv:2408.00965*.

#### **Blockchain Governance / Blockchain as a Service**

7. **Liu, Y.**, Lu, Q., Yu, G., Paik, H. Y., & Zhu, L. (2022). Defining blockchain governance principles: A comprehensive framework. *Information systems*, 109, 102090.
8. **Liu, Y.**, Lu, Q., Zhu, L., Paik, H. Y., & Staples, M. (2023). A systematic literature review on blockchain governance. *Journal of Systems and Software*, 197, 111576.

9. **Liu, Y.**, Lu, Q., Yu, G., Paik, H. Y., & Zhu, L. (2023, March). A Pattern-Oriented Reference Architecture for Governance-Driven Blockchain Systems. In *2023 IEEE 20th International Conference on Software Architecture (ICSA)* (pp. 23-34). IEEE.
10. **Liu, Y.**, Lu, Q., Paik, H. Y., Xu, X., Chen, S., & Zhu, L. (2020). Design pattern as a service for blockchain-based self-sovereign identity. *IEEE Software*, 37(5), 30-36.

For the full publication list please see: <https://scholar.google.com.au/citations?user=cG34KO4AAAAJ>

## **PROFESSIONAL SERVICES**

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### **Conference Committees**

1. ICSE 2025, 3rd International Workshop on Responsible AI Engineering, PC member
2. ICSA 2025, 4th International Workshop on Software Architecture and Machine Learning, PC member
3. IEEE S&P 2025, Human-Machine Intelligence for Security Analytics, PC member
4. IEEE ISPA 2024, Main track, PC member
5. IEEE Blockchain 2024, Main track, PC member
6. ICSE 2024, 2nd International Workshop on Responsible AI Engineering, PC member
7. IEEE Blockchain 2023, Main track, PC member

### **Invited Reviewer**

1. ACM Computing Surveys
2. Journal of Systems & Software
3. ACM Transactions on Sensor Networks
4. IEEE Transactions on Intelligent Transportation Systems
5. IEEE Transactions on Neural Networks and Learning Systems
6. IEEE Transactions on Computational Social Systems
7. IEEE Transactions on Intelligent Vehicles
8. IEEE Software
9. IT Professional
10. IEEE Access
11. Peer-to-Peer Networking and Applications
12. Cluster Computing
13. Information and Software Technology

For the full professional service list please see: <https://yue-charlie-liu.github.io/news/>