Yue Liu

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

EDUCATIONAL BACKGROUND

Degree	Doctor of Philosophy (2020.09 – 2024.09)
University	University of New South Wales (co-supervised by researchers from CSIRO's Data61)
Major	Computer Science and Engineering
Supervisors	Dr. Liming Zhu, Dr. Qinghua Lu, Dr. Hye-Young Paik

Degree	Master of Engineering by Research (2017.09 – 2020.06)
University	China University of Petroleum (East China)
Major	Software Engineering

Degree	Bachelor (2013.09 - 2017.06)
University	China University of Petroleum (East China)
Major	Computer Science and Technology; English (double major)

PUBLICATION (No. of paper: 36, citations: 1613, h-index: 15)

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*.

7. Xia, B., Zhang, D., **Liu, Y**., Lu, Q., Xing, Z., & Zhu, L. (2023). Trust in Software Supply Chains: Blockchain-Enabled SBOM and the AIBOM Future. *arXiv preprint arXiv:2307.02088*.
8. Zhang, D., Xia, B., **Liu, Y**., Xu, X., Hoang, T., Xing, Z., ... & Zhu, L. (2023). Navigating privacy and copyright challenges across the data lifecycle of generative AI. *arXiv preprint arXiv:2311.18252*.
9. Zhang, W., Lu, Q., Yu, Q., Li, Z., **Liu, Y**., Lo, S. K., ... & Zhu, L. (2020). Blockchain-based federated learning for device failure detection in industrial IoT. *IEEE Internet of Things Journal*, *8*(7), 5926-5937.
10. Xia, B., Lu, Q., Perera, H., Zhu, L., Xing, Z., **Liu, Y**., & Whittle, J. (2023, May). Towards Concrete and Connected AI Risk Assessment (C^2 AIRA): A Systematic Mapping Study. In *2023 IEEE/ACM 2nd International Conference on AI Engineering–Software Engineering for AI (CAIN)* (pp. 104-116). IEEE.
11. Lee, S. U., Perera, H., Xia, B., **Liu, Y**., Lu, Q., Zhu, L., ... & Whittle, J. (2023). QB4AIRA: A Question Bank for AI Risk Assessment. *arXiv preprint arXiv:2305.09300*.
12. Xia, B., Lu, Q., Zhu, L., Lee, S. U., **Liu, Y**., & Xing, Z. (2023). From principles to practice: An accountability metrics catalogue for managing AI risks. *arXiv preprint arXiv:2311.13158*.

Blockchain Governance / Blockchain as a Service

13. **Liu, Y**., Lu, Q., Yu, G., Paik, H. Y., & Zhu, L. (2022). Defining blockchain governance principles: A comprehensive framework. *Information systems*, *109*, 102090.
14. **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.
15. **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.

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

EXPERIENCE

1. Research Engineer (09/2023 to present, **CSIRO's Data61**)
    - Receive "**Early Career in Science Award**" in Data61 Software & Computational Systems Biannual Awards, 2024.
    - Propose an architectural pattern catalogue for foundation model-based agents.
    - Co-contributions to the ESG-AI framework development collaborating with Alphinity.
    - Propose an architecture design and analyse design decision trade-offs for a tax copilot collaborating with Empathetic AI.
    - 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.
    - Technical lead for the Data Bill of Materials project collaborated with CSIRO IM&T department.
    - Data validation and qualitative analysis for International Network of AI Safety Institutes Joint Testing Exercise.
    - Prototype development for blockchain-based Indigenous information tracing platform.

2. Research Technician (07/2022 to 09/2023, **CSIRO's Data61**)
    - Conduct multivolcal literature review for risk assessment for Responsible AI.
    - Refine metrics for AI risk assessment.
3. 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.