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Automata learning: from probabilistic to quantum

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Curriculum Vitae

Wenjing Chu was born on December 26, 1991. She enrolled in 2010 in the BSc program in Applied Physics at Anhui Jianzhu University in Hefei, Anhui, China, where she developed a strong foundation in physical sciences. She successfully completed her degree in 2014. Motivated to explore the field of quantum physics, Wenjing pursued her MSc at Anhui University, also in Hefei, specializing in Quantum Information, where she obtained her MSc degree in 2018.

Wenjing started her PhD at Leiden University, the Netherlands, in 2018, under the guidance of Prof. Dr. M.M. Bonsangue. Her research is driven by a passion for understanding quantum and probabilistic systems spanning topics such as quantum information, probabilistic systems, and automata learning. Throughout her doctoral studies, Wenjing has explored the world of quantum and probabilistic automata, making contributions that have been published in international conferences.

Her work addresses the challenges of learning probabilistic automata, quantum automata, and developing optical simulations within quantum information science. In addition to her technical research, Wenjing has actively engaged in professional development, completing courses on science communication, time management, and scientific conduct. These experiences have strengthened her skills in effectively sharing her research and managing complex projects, preparing her for a career in computing and quantum technologies.

Publication List

- **Approximately learning quantum automata.**
Wenjing Chu, Shuo Chen, Marcello Bonsangue, and Zenglin Shi. In: David, C., Sun, M. (eds) Theoretical Aspects of Software Engineering – TASE 2023. Lecture Notes in Computer Science, vol 13931, pp. 268-285. Springer, 2023.
- **Non-linear optimization methods for learning regular distributions.**
Wenjing Chu, Shuo Chen, and Marcello Bonsangue. In: Riesco, A., Zhang, M. (eds) Formal Methods and Software Engineering – ICFEM 2022. Lecture Notes in Computer Science, vol 13478, pp. 54-70. Springer, 2022.
- **Learning probabilistic automata using residuals.**
Wenjing Chu, Shuo Chen, and Marcello Bonsangue. In: Cerone, A., Ölveczky, P.C. (eds) Theoretical Aspects of Computing – ICTAC 2021. Lecture Notes in Computer Science, vol 12819, pp. 295-313. Springer, 2021
- **Learning probabilistic languages by k-testable machines.**
Wenjing Chu and Marcello Bonsangue. In proceedings of the 2020 International Symposium on Theoretical Aspects of Software Engineering (TASE), Hangzhou, China, 2020, pp. 129-136, IEEE, 2021.
- **Creating photonic GHZ and W states via quantum walk**
Le Ju, Ming Yang, Nikola Paunković, Wenjing Chu, and Zhuo-Liang Cao. Quantum Information Processing 18:176, 2019.
- **Optical simulation of adaptive nonlocality distillation.**
Wenjing Chu, Ming Yang, Guo-Zhu Pan, and Zhuo-Liang Cao, Physical Reviews A: 98(4), 042123. American Physical Reviews, 2018.
- **Protection of qubit-coherence on a Bloch sphere**
Xiao-Lan Zong, Wenjing Chu, Ming Yang, Qing Yang, and Zhuo-Liang Cao. Laser Physics Letters 14(7): 075201, 2017.

- **Optical scheme for simulating post-quantum nonlocality distillation.**
Wenjing Chu, Ming Yang, Guo-Zhu Pan, Qing Yang, and Zhuo-Liang Cao, Optics Express 24:27319-37330, 2016.
- **Optical simulation of a Popescu-Rohrlich Box.**
Wenjing Chu, Xiao-Lan Zong, Ming Yang, Guo-Zhu Pan and Zhuo-Liang Cao. Scientific Reports 6:28351, 2016.

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I am deeply impressed by Marcello's thoroughness and intellectual precision. Over the past few years, I have gained a completely new understanding and methodology in mathematics and logic. Throughout the learning process, he consistently encouraged me, reminding me that every paper has merit. He took every immature idea of mine seriously, giving it great importance, analyzing it thoroughly, and helping me develop each concept.

Beyond academic guidance, Marcello showed genuine concern for my well-being, both physical and mental. From my very first day in the Netherlands, I felt welcomed and supported, largely thanks to him. I still remember arriving in the early morning and being greeted by him at the airport. He drove me to my accommodation, and we enjoyed a warm conversation along the way. He waited with me until the caretaker arrived and ensured I was settled. When he discovered my apartment was empty, he even took me to buy a mattress that same afternoon.

I am grateful to my other promotor Frank de Boer and to the committee members for my PhD defense for their comments on my thesis and to my co-authors for their invaluable contributions to our collaborative work. Their expertise, dedication, and constructive feedback have been instrumental in our research's success. Special thanks to Shuo Chen, Zenglin Shi, and Junlong Zhao.

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