PAN CHEN

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RESEARCH INTERESTS

AI for Science (scientific discoveries), LLM, Computational Creativity, Human-Computer Interaction

EDUCATION

PhD Student in Computer Science, University of Toronto   2022 - Present

- Supervisor: Dr. Alán Aspuru-Guzik
- Regular Committee Members: Dr. Nicholas Papernot, Dr. Michael Liut

Summer School (Full Scholarship), Carnegie Mellon University   Jul 2023

- Mentors and Paper Collaborators: Dr. John Stamper, Dr. Steven Moore

Bachelor of Science in Computer Science and Statistics, University of Toronto   2018 - 2022

- Research advisor: Dr. Joseph Jay Williams

EXPERIENCE

Instructor   Jan 2025 - Present
Departments of Computer Science   *Toronto, Ontario*

- CSC148 (Introduction to Computer Science), CSC207 (Software Design), CSC309 (Programming on the Web)
- Teaching students foundational computer science concepts and practical skills that will empower them in their academic and professional journeys.

Research Assistant   Sep 2022 - Dec 2023
Dynamic Graphics Project Lab, University of Toronto   *Toronto, Ontario*

- Led team and win the [XPRIZE Digital Learning Challenge](#) by using applied machine learning algorithms to improve the learning experience
- Gained significant media attention, being reported by different news sources

Research Scholar   May 2022 - Aug 2022
Data Sciences Institute (DSI), advisor: Dr. Michael Liut   *Toronto, Ontario*

- Developed a platform for people to collect data from third-party websites
- Prepared different data analysis scripts for people to run in the front end

Teaching Assistant   Sep 2021 - Dec 2024
Departments of Computer Science and Statistics, University of Toronto   *Toronto, Ontario*

- Worked with different faculty to reinnovate course materials and improve student learning experience

Software Developer Co-op @ Infrastructures for Information (i4i)   Jun 2020 - Jun 2021
Toronto, Ontario

- Developed a platform for people to collect data from third-party websites
- Prepared different data analysis scripts for people to run in the front end

PUBLICATIONS

Chen, P., et al. (n.d.). Schema-Based Reasoning: A new paradigm for in-context learning (Paper submitted to ICLR 2026).

Zhang, Z., Chen, P., Du, F., Ye, R., Huang, O., Liut, M., Aspuru-Guzik, A. (2025). TreeReader: A Hierarchical Academic Paper Reader Powered by Language Models. arXiv preprint arXiv:2507.18945. (Paper accepted by VL/HCC 2025)

Gaidimas, M., Mandal, A., Chen, P., Leong, S. X., Kim, G. H., Talekar, A., ... Aspuru-Guzik, A. (2025). Computer Vision for High-Throughput Materials Synthesis: A Tutorial for Experimentalists.

Chen, P., Zavaleta Bernuy, A., Liut, M., Williams, J. J. (2024). Adaptive experiments for continuous improvement in computer science education: A case study. In Proceedings of the 26th Western Canadian Conference on Computing Education (pp. 1-7).

Bhattacharjee, A., Chen, P., Mandal, A., Hsu, A., O'Leary, K., Mariakakis, A., Williams, J. J. (2024). Exploring user perspectives on brief reflective questioning activities for stress management: Mixed methods study. JMIR Formative Research, 8(1), e47360.

Ye, R., Chen, P., Mao, Y., Wang-Lin, A., Shaikh, H., Zavaleta Bernuy, A., Williams, J. J. (2022, September). Behavioral consequences of reminder emails on students' academic performance: A real-world deployment. In Proceedings of the 23rd Annual Conference on Information Technology Education (pp. 16-22).

Musabirov, I., Zavaleta Bernuy, A., Chen, P., Liut, M., Williams, J. (2024, May). Opportunities for Adaptive Experiments to Enable Continuous Improvement in Computer Science Education. In Proceedings of the 26th Western Canadian Conference on Computing Education (pp. 1-7).

Chen, P., Sibia, N., Zavaleta Bernuy, A., Liut, M., Williams, J. J. (2022, March). Investigating the Impact of Voice Response Options in Surveys. In Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2 (pp. 1124-1124).

Han, Z., Gorobets, E., Chen, P. (2022). Parameter efficient dendritic-tree neurons outperform perceptrons. arXiv preprint arXiv:2207.00708. Work presented at ICML 2022 Dynamic Neural Networks Workshop.

PROJECTS

Schema-Based In-Context Learning Mimic the human ability to learn from abstractions to enhance scientific understanding.

Adaptive Experiments for Science A modern platform for data-driven experiments that adapt and improve over time by utilizing machine learning algorithms.

Digital Learning Challenge by XPrize Lead software developer & Machine Learning designer for the cross-platform infrastructure that supports both traditional and adaptive experiments and Machine Learning. We collaborated with CMU & UNC, and deployed our infrastructure in more than **25** courses. We are the grand winner of this XPRIZE Digital Learning Challenge sponsored by IES. (More)

Voice Reflection System Lead designer & developer of this online reflection system that allows students to reflect on course topics by talking. This system has been used by more than 500 students at the University of Toronto.

Face-Control Snake Game Applied a TensorFlow model called PoseNet to detect the player's position in real-time, so that the player can move their face to control the snake. (Video)