Lin Ai

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Education

Ph.D.	**Columbia University** Computer Science, Natural Language Processing Advisor: Prof. Julia Hirschberg ⧉	Sep 2020 – Aug 2025 (Expected)
M.Sc.	**Columbia University** Computer Science with Machine Learning Focus	Sep 2018 – Feb 2020
B.Math	**University of Waterloo** Computer Science, Statistics, Actuarial Science (Triple Major) Graduated with Distinction, multiple Dean's Honor List recognitions.	Sep 2013 – Apr 2018
Exchange	**École Polytechnique Fédérale de Lausanne** Computer Science	Feb 2016 – Jul 2016

Research Area

Past & Ongoing Efforts: Natural Language Processing, Information Disorder, Social Networks, Spoken Language Processing

Broader Interests & Current Focus: LLM Safety and Alignment, Responsible/Ethical AI, AI for Science/Health

Professional Experience

JP Morgan Chase, *AI/ML Data Associate Research Intern* (ML Team led by Dr. Lidia Mangu ⧉) — New York, NY · Jun 2024 - Aug 2024

- Engineered an LLM-powered automated evaluation framework for document-level novelty, leveraging atomicity scores and information salience to enhance interpretability and align closely with human judgment.
- Developed a patent-pending innovation, currently under review.

Meta, *Research Scientist Intern* (Multimodal Team led by Dr. Florian Metze ⧉) — New York, NY · May 2022 - Sep 2022

- Built a multimodal sentiment classification model with optimized unimodal representation learning, achieving performance on par with state-of-the-art models.
- Designed and implemented a multimodal BYOL framework for self-supervised training, significantly enhancing cross-domain data representation and adaptation.

Electronic Arts, *Software Engineer Intern* — Vancouver, Canada · Sep 2017 - Dec 2017

- Engineered a real-time connection pipeline between external editors and FrostEd, enabling seamless database and UI synchronization.
- Built and integrated a language server for an internal scripting language in VS Code, enhancing run-time communication with FrostEd.

Microsoft, *Software Engineer Intern* — Tokyo, Japan · Jan 2017 - Apr 2017

- Developed and launched new features for Office Lens, enabling multi-shot functionality and batch uploads, rolled out globally in August 2017.
- Optimized telemetry endpoints to improve user insights and streamline project management.

Research Experience

Columbia University — New York, NY · Sep 2018 - Present

Ph.D. Candidate

- Led multiple DARPA and AFOSR-funded projects on information disorder, including misinformation detection, malicious intent identification, radicalization analysis, and cyberattack defense.
- Advanced LLM safety and integrity by improving LLM generation and addressing misuse.

Graduate Research Assistant (Advisor: Prof. Julia Hirschberg ⧉)

- Contributed to multiple DARPA-funded multimodal paralinguistic projects, including sentiment and humor detection in videos, speech emotion conversion, and speech accent conversion.

University of Waterloo, *Undergraduate Research Assistant* (Advisor: Prof. Pascal Poupart ⧉) — Waterloo, Canada · May 2017 - Apr 2018

- Designed and implemented an RNN-based chatbot with efficient chat history retrieval.
- Developed emotion and stress detection models using time-series data from wearable devices.

Publications

[1] **Enhancing Pre-Trained Generative Language Models with Question Attended Span Extraction on Machine Reading Comprehension** Paper ↗ Code ↗
L. Ai, Z. Hui, Z. Liu, J. Hirschberg
The 2024 Conference on Empirical Methods in Natural Language Processing (*EMNLP'24*)

[2] **Defending Against Social Engineering Attacks in the Age of LLMs** Paper ↗ Code ↗
L. Ai*, T. Kumarage*, A. Bhattacharjee*, Z. Liu, Z. Hui, M. Davinroy, J. Cook, L. Cassani, K. Trapeznikov, M. Kirchner, A. Basharat, A. Hoogs, J. Garland, H. Liu, J. Hirschberg
The 2024 Conference on Empirical Methods in Natural Language Processing (*EMNLP'24*)

[3] **A Survey on Open Information Extraction from Rule-based Model to Large Language Model** Paper ↗
P. Liu*, W. Gao*, W. Dong*, **L. Ai***, Z. Gong*, S. Huang, Z. Li, E. Hoque, J. Hirschberg, Y. Zhang
The 2024 Conference on Empirical Methods in Natural Language Processing (*EMNLP'24 Findings*)

[4] **NovAScore: A New Automated Metric for Evaluating Document Level Novelty** Paper ↗
L. Ai, Z. Gong, H. Deshpande, A. Johnson, E. Phung, A. Emami, J. Hirschberg
The 31st International Conference on Computational Linguistics (*COLING'25 Submission*)

[5] **PropaInsight: Toward Deeper Understanding of Propaganda in Terms of Techniques, Appeals, and Intent**
J. Liu*, **L. Ai***, Z. Liu, P. Karisani, Z. Hui, M. Fung, P. Nakov, J. Hirschberg, H. Ji
The 31st International Conference on Computational Linguistics (*COLING'25 Submission*)

[6] **CREAM: Comparison-Based Reference-Free ELO-Ranked Automatic Evaluation for Meeting Summarization** Paper ↗
Z. Gong, **L. Ai**, H. Deshpande, A. Johnson, E. Phung, Z. Wu, A. Emami, J. Hirschberg
The 31st International Conference on Computational Linguistics (*COLING'25 Submission*)

[7] **TweetIntent@Crisis: A Dataset Revealing Narratives of Both Sides in the Russia-Ukraine Crisis** Paper ↗
L. Ai, S. Gupta, S. Oak, Z. Hui, Z. Liu, J. Hirschberg
The 18th International AAAI Conference on Web and Social Media (*ICWSM'24*)

[8] **Beyond Silent Letters: Amplifying LLMs in Emotion Recognition with Vocal Nuances** Paper ↗
Z. Wu, Z. Gong, **L. Ai**, P. Shi, K. Donbekci, J. Hirschberg
arXiv preprint: 2407.21315, 2024

[9] **Combating the COVID-19 Infodemic: Untrustworthy Tweet Classification using Heterogeneous Graph Transformer** Paper ↗ Code ↗
L. Ai, Z. Liu, J. Hirschberg
The 17th International AAAI Conference on Web and Social Media (*ICWSM'23*)

[10] **What Makes A Video Radicalizing? Identifying Sources of Influence in QAnon Videos** Paper ↗
L. Ai, Y. Chen, Y. Yu, S. Kweon, J. Hirschberg, S. I. Levitan
The 9th International Conference on Computational Social Science (*IC^2S^2'23*)

[11] **Identifying the Popularity and Persuasiveness of Right- and Left-Leaning Group Videos on Social Media** Paper ↗
L. Ai, A. Kathuria, S. Panda, A. Sahai, Y. Yu, S. I. Levitan, J. Hirschberg
2021 IEEE International Conference on Big Data (*IEEE BigData'21*)

[12] **Exploring New Methods for Identifying False Information and the Intent Behind It on Social Media: COVID-19 Tweets** Paper ↗
L. Ai, R. Chen, Z. Gong, J. Guo, S. Hooshmand, Z. Yang, J. Hirschberg
The 15th International AAAI Conference on Web and Social Media (*ICWSM'21*)

[13] **A New Approach to Accent Recognition and Conversion for Mandarin Chinese** Paper ↗
L. Ai, S. Jeng, H. Beigi
arXiv preprint: 2008.03359, 2020

[14] **Multimodal Indicators of Humor in Videos** Paper ↗
Z. Yang, **L. Ai**, J. Hirschberg
The 2019 IEEE Conference on Multimedia Information Processing and Retrieval (*IEEE MIPR'19*)

Entrepreneurial Experience

Have You Met (*Startup*), *Chief AI Lead*
New York, NY
Jul 2023 - Present

- Leading the AI/ML development for an LLM-powered next-generation dating app, driving innovation and preparing for product launch in October 2024.