

# Yangjun Ruan

UNIVERSITY OF TORONTO & VECTOR INSTITUTE

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## EDUCATION

Department of Computer Science, **University of Toronto**  
Ph.D. Student

Sep. 2020 - Present

- Affiliated with Vector Institute & Machine learning group
- Advisors: Chris J. Maddison & Jimmy Ba

Department of Information Science & Electronic Engineering, **Zhejiang University**  
B.Eng., Information Engineering

Sep. 2016 - Jun. 2020

- GPA: 94.1/100, Major: 94.8/100, **Rank: 1/140** (three consecutive years)
- Graduated with the highest honor (CHU Kochen Scholarship)

## RESEARCH VISITS

Department of Computer Science, **Stanford University**  
Visiting Student Researcher

Nov. 2023 - Present

- Advisor: Tatsunori Hashimoto

Department of Computer Science, **University of California, Los Angeles**  
Visiting Research Intern

Jul. 2019 - Sep. 2019

- Cross-disciplinary Scholars in Science and Technology (CSST)
- Advisor: Cho-Jui Hsieh

## RESEARCH INTERESTS

My research focuses on the new scaling paradigms of language models and agents in data-constrained scenarios. I am generally interested in synthetic data, scalable evaluation and alignment, and agents.

## PUBLICATIONS

### Representative papers

- [Reasoning to Learn from Latent Thoughts](#)  
**Yangjun Ruan**, Neil Band, Chris J. Maddison, Tatsunori Hashimoto.  
arXiv:2503.18866, 2025
- [Observational Scaling Laws and the Predictability of Language Model Performance](#)  
**Yangjun Ruan**, Chris J. Maddison, Tatsunori Hashimoto.  
Advances in Neural Information Processing Systems (NeurIPS), 2024. **[Spotlight]**
- [Identifying the Risks of LM Agents with an LM-Emulated Sandbox](#)  
**Yangjun Ruan\***, Honghua Dong\*, Andrew Wang, Silviu Pitis, Yongchao Zhou, Jimmy Ba, Yann Dubois, Chris J. Maddison, Tatsunori Hashimoto.  
International Conference on Learning Representations (ICLR), 2024. **[Spotlight]**

### Preprints & Submissions

- Just Put It All in Context: Simplifying Agents with Long-Context Language Models  
Mingjian Jiang, **Yangjun Ruan**, Luis A. Lastras, Pavan Kapanipathi, Tatsunori Hashimoto  
In submission, 2025
- [MixMin: Finding Data Mixtures via Convex Minimization](#)  
Anvith Thudi, Evianne Rovers, **Yangjun Ruan**, Tristan Thrush, Chris J. Maddison.  
arXiv:2502.10510, 2025

### Peer-reviewed papers

- [Graph-based Uncertainty Metrics for Long-form Language Model Outputs](#)  
Mingjian Jiang, **Yangjun Ruan**, Prasanna Sattigeri, Salim Roukos, Tatsunori Hashimoto.  
Advances in Neural Information Processing Systems (NeurIPS), 2024. **[Spotlight]**

- [Weighted Ensemble Self-Supervised Learning](#)  
**Yangjun Ruan**, Saurabh Singh, Warren R. Morningstar, Alexander A. Alemi, Sergey Ioffe, Ian Fischer, Joshua V. Dillon.  
International Conference on Learning Representations (ICLR), 2023.
- [Calibrating Language Models via Augmented Prompt Ensembles](#)  
Mingjian Jiang\*, **Yangjun Ruan\***, Sicong Huang, Saifei Liao, Silviu Pitit, Roger Grosse, Jimmy Ba  
ICML Workshop on Deployment Challenges for Generative AI, 2023.
- [Optimal Representations for Covariate Shift](#)  
**Yangjun Ruan\***, Yann Dubois\*, Chris J. Maddison.  
International Conference on Learning Representations (ICLR), 2022.
- [Augment with Care: Contrastive Learning for Combinatorial Problems](#)  
Haonan Duan, Pashootan Vaezipoor, Max B. Paulus, **Yangjun Ruan**, Chris J. Maddison.  
International Conference on Machine Learning (ICML), 2022.
- [Improving Lossless Compression Rates via Monte Carlo Bits-Back Coding](#)  
**Yangjun Ruan\***, Karen Ullrich\*, Daniel Severo\*, James Townsend, Ashish Khisti, Arnaud Doucet, Alireza Makhzani, Chris J. Maddison.  
International Conference on Machine Learning (ICML), 2021. **[Oral]**
- [Learning to Learn by Zeroth-Order Oracle](#)  
**Yangjun Ruan**, Yuanhao Xiong, Sashank Reddi, Sanjiv Kumar, Cho-Jui Hsieh.  
International Conference on Learning Representations (ICLR), 2020.
- [FastSpeech: Fast, Robust and Controllable Text to Speech](#)  
Yi Ren\*, **Yangjun Ruan\***, Xu Tan, Tao Qin, Sheng Zhao, Zhou Zhao, Tie-Yan Liu.  
Advances in Neural Information Processing Systems (NeurIPS), 2019.
- [Data Transmission in Mobile Edge Networks: Whether and Where to Compress?](#)  
Jinke Ren\*, **Yangjun Ruan\***, Guanding Yu.  
IEEE Communications Letters 23 (3), 490-493.

**Note:** \* above denotes equal contribution.

## RESEARCH EXPERIENCE

|  |  |
|--|--|
| <b>Stanford University</b> , Visiting Student Researcher<br>Advisor: Tatsunori Hashimoto<br>Topic: scaling laws, synthetic data, pretraining, agents                             | Palo Alto<br>Nov. 2023 - Present       |
| <b>University of Toronto &amp; Vector Institute</b> , Research Assistant<br>Advisor: Chris J. Maddison, Jimmy Ba<br>Topic: language models, agents, evaluation                   | Toronto<br>Oct. 2022 - Present         |
| <b>Google Research</b> , Student Researcher<br>Advisor: Ian Fischer, Joshua V. Dillon<br>Topic: self-supervised learning, ensemble method  | Mountain View<br>Jun. 2022 - Sep. 2022 |
| <b>University of Toronto &amp; Vector Institute</b> , Research Assistant<br>Advisor: Chris J. Maddison<br>Topic: representation learning, distribution shift, neural compression | Toronto<br>Jul. 2020 - Mar. 2022       |
| <b>Microsoft Research Asia</b> , Research Intern<br>Advisor: Li Dong, Furu Wei<br>Topic: implicit deep learning methods, Transformer model                                       | Beijing<br>Nov. 2019 - Jun. 2020       |
| <b>University of California Los Angeles</b> , Visiting Research Intern<br>Advisor: Cho-Jui Hsieh<br>Topic: learning to learn, zeroth-order optimization, adversarial robustness  | Los Angeles<br>Jul. 2019 - Sep. 2019   |
| <b>Zhejiang University</b> , Research Assistant<br>Advisor: Zhou Zhao, Tao Qin<br>Topic: non-autoregressive seq-to-seq model   | Hangzhou<br>Feb. 2019 - Jun. 2019      |

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|-------|--|------------|
| TALKS | Reasoning to Learn from Latent Thoughts  |            |
|       | • Vector Institute, ML Lunch Talk Series   | Apr. 2025  |
|       | Measuring Complex Capabilities and Risks of Language Models at Scale   |            |
|       | • Stanford University, ML Lunch Talk Series  | Oct. 2024  |
|       | • Google Research & DeepMind, SPARK Seminar  | Sept. 2024 |
|       | ToolEmu: Identifying the Risks of LM Agents with an LM-Emulated Sandbox  |            |
|       | • AI TIME Special Talk Forum   | Jan. 2024  |
|       | • Vector Institute, AI Safety Seminar  | Dec. 2023  |
|       | • Google Research, Robustness Talk Series  | Nov. 2023  |
|       | • Toronto Data Workshop  | Oct. 2023  |
|       | Optimal Representations for Covariate Shift  |            |
|       | • Google Research  | Aug. 2022  |
|       | • CMU, OOD Robustness and Generalization Seminar   | Jun. 2022  |
|       | Monte Carlo Bits-Back Coding   |            |
|       | • ICML [ <b>Long talk</b> ]  | Jun. 2021  |
|       | • ICLR Neural Compression Workshop [ <b>Oral</b> ]   | May. 2021  |
|       | SERVICES   |            |
|       | I served as  |            |
|       | • Conference reviewer: NeurIPS (20’-), ICLR (21’-), ICML (21’-)  |            |
|       | • Workshop reviewer: NeurIPS DGMs Applications Workshop (21’), NeurIPS Pretraining Workshop (22’), ICLR Mathematical and Empirical Understanding of Foundation Models Workshop (23’) |            |

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|-----------------|---|-----------------------|
| AWARDS & HONORS | • Ontario Graduate Scholarship  | Jul. 2023             |
|                 | • Outstanding Reviewer for ICML 2022  | Jul. 2022             |
|                 | • DiDi Graduate Student Award   | Dec. 2021             |
|                 | • Computer Science 50th Anniversary Graduate Scholarship                                  | Dec. 2020             |
|                 | • CHU Kochen Scholarship  | Oct. 2019             |
|                 | • <b>Highest</b> scholarship for only <b>top 12</b> undergraduates at Zhejiang University |                       |
|                 | • National Scholarship (top <b>1.5%</b> )   | Oct. 2017, 2018, 2019 |
|                 | • Cross-disciplinary Scholars in Science and Technology (CSST), UCLA                      | Jul. 2019             |
|                 | • CSST Best Research Presenter, UCLA  | Sep. 2019             |
|                 | • Meritorious Winner, Interdisciplinary Contest in Modeling (ICM)                         | May. 2018             |