Justin T Chiu

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RESEARCH INTERESTS

Automating software engineering. RL with fast sampling and rich environments. Text diffusion.

EMPLOYMENT

Member of Technical Staff at Cohere — 2024 - 2025

· Hillclimbed SWE-bench Verified agent performance from 75 to 193/500.
· Prepared 20B tokens of repository-level repair data.
· Increased code execution sandbox throughput by 2x by migrating from local Docker evaluation to asynchronous server.
· Wrote remote execution backend for the Commit0 benchmark.

Research Engineer at Facebook AI Research — 2015 - 2017

· Developed neural models for machine translation.
· Open sourced a recurrent neural network library in Torch called torch-rnnlib.
· Tuned performance (accuracy and computation) of convolutional machine translation models.

Research Intern at New York University — 2015

· Applied neural network models to treatment effect estimation.

EDUCATION

Cornell Tech, — Fall 2020 - Spring 2024
PhD in Computer Science, advised by Sasha Rush

Harvard University, — Fall 2017 - Spring 2020
PhD in Computer Science (start)

University of Pennsylvania, — Fall 2011 - Spring 2015
MSE and BS in Computer Science

PUBLICATIONS

J. Chiu*, Z. Kovacic*, C. Lee*, W. Zhao, K. Ellis. *Refactoring Codebases through Library Design* . In submission.

S. Sahoo, J. Deschenaux, A. Gokaslan, G. Wang, **J. Chiu**, V. Kuleshov. *The Diffusion Duality* . ICML 2025.

W. Zhao, N. Jiang, C. Lee, **J. Chiu**, C. Cardie, M. Galle, A. Rush. *Commit0: Library Generation from Scratch.* ICLR 2025.

M. Arriola, S. Sahoo, A. Gokaslan, Z. Yang, Z. Qi, J. Han, **J. Chiu**, V. Kuleshov. *Block Diffusion: Interpolating Between Autoregressive and Diffusion Language Models.* ICLR 2025.

S. Sahoo, M. Arriola, Y. Schiff, A. Gokaslan, E. Marroquin, **J. Chiu**, A. Rush, V. Kuleshov. *Simple and Effective Masked Diffusion Language Models.* NeuRIPS 2024.

S. Keh, **J. Chiu**, D. Fried. *Asking More Informative Questions for Grounded Retrieval.* NAACL 2024.

J. Morris, W. Zhao, **J. Chiu**, V. Shmatikov, S. Rush. *Language Model Inversion.* ICLR 2024.

J. Chiu, W. Zhao, D. Chen, S. Vaduguru, D. Fried, A. Rush. *Symbolic Planning and Code Generation for Grounded Dialogue.* EMNLP 2023.

W. Zhao, **J. Chiu**, C. Cardie, A. Rush. *Hop, Union, Generate: Explainable Multi-hop Reasoning without Rationale Supervision.* EMNLP 2023.

W. Zhao, **J. Chiu**, C. Cardie, A. Rush. *Abductive Commonsense Reasoning Exploiting Mutually Exclusive Explanations.* ACL 2023.

Z. Xu, F. Yan, R. Singh, **J. Chiu**, A. Rush, M. Yu. *Teal: Learning-Accelerated Optimization of WAN Traffic Engineering.* SIGCOMM 2023.

J. Chiu, W. Zhao, A. Rush, D. Fried. *Modeling Perspective-Dependent Ambiguity in Collaborative Dialogue.* Wordplay: When Language Meets Games Workshop, 2022.

J. Morris, **J. Chiu**, A. Rush. *Unsupervised Text Deidentification.* Findings of EMNLP, 2022.

J. Chiu, Y. Deng, A. Rush. *Low-Rank Constraints for Fast Inference in Structured Models.* NeurIPS 2021.

D. Fried, **J. Chiu**, D. Klein. *Reference-Centric Models for Grounded Collaborative Dialogue.* EMNLP 2021.

J. Chiu, A. Rush. *Scaling Hidden Markov Language Models.* EMNLP 2020.

F. Obermeyer, E. Bingham, M. Jankowiak, **J. Chiu**, N. Pradhan, A. Rush, N. Goodman. *Tensor Variable Elimination for Plated Factor Graphs.* ICML 2019.

Y. Deng, Y. Kim, **J. Chiu**, D. Guo, A. Rush. *Latent Alignment and Variational Attention.* NIPS 2018.

W. Shang, **J. Chiu**, and K. Sohn. *Exploring Normalization in Deep Residual Networks with Concatenated Rectified Linear Units.* AAAI 2017.

TEACHING EXPERIENCE

Teaching Assistant for Algorithms Fall 2023
· Wrote homeworks on greedy, divide and conquer, dynamic programming and randomized algorithms.

Head Teaching Fellow for Break Through Tech AI Summer 2022
· Taught introduction to machine learning for 110 students.
· Held two 3-hour classes per week.

Teaching Fellow for Natural Language Processing Spring 2019
· Covered neural and graphical model approaches to fundamental natural language processing problems, such as text classification, language modeling, and alignment.
· Assisted in course planning and assignment creation and writing.
· Received 4.8/5 overall score and the Certificate of Distinction in Teaching as a teaching fellow.

SERVICE

Reviewer: ICLR 2021-2025, ICML 2023, NeurIPS 2021-2025, COLM 2024 Area chair: COLM 2025