

Tyler A. Chang

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EDUCATION

University of California San Diego PhD Student in Cognitive Science Halıcıoğlu Data Science Institute, Graduate Fellow	2020-Present
Carleton College , Northfield, MN BA in Mathematics, summa cum laude BA in Cognitive Science, with distinction	2016-2020
Budapest Semesters in Mathematics Budapest, Hungary	Fall 2018
Carleton Linguistics and Culture Doshisha University, Kyoto, Japan	Spring 2018

RESEARCH INTERESTS

- **Natural language processing:** language modeling, deep learning interpretability and analysis.
- **Cognitive linguistics:** distributional semantics, discourse processes, language acquisition.

INDUSTRY

Amazon , Applied Scientist Intern ▪ AWS AI Comprehend: researched linguistic dataset drift and out-of-domain model generalization. ▪ Alexa AI: researched methods for predicting content changes on the web.	Summers 2021, 2022
Google , Software Engineering Intern ▪ Cloud AI Translation: researched methods for extracting aligned sentence pairs from documents, generating training data for neural machine translation models. ▪ Geo Machine Perception: designed and implemented data pipelines to generate ground truth alignment metrics between aerial and street level imagery datasets at scale.	Summers 2019, 2020
Google , Chrome, Engineering Practicum Intern ▪ Built an independent server for retrieving and displaying support issues on the Chrome Web Store, serving tens of millions of monthly users.	Summer 2018

ACADEMIA

Graduate Student Researcher , UC San Diego Language and Cognition Lab; Machine Learning, Perception, and Cognition Lab ▪ Conduct research in natural language processing and computational linguistics.	2020-Present
Research Assistant , Carleton College Language and Cognition Lab, Cognitive Science Research Lab ▪ Ran eye-tracking studies examining how people identify objects in conversation. ▪ Conducted interviews assessing knowledge representation in children.	2019-2020

TEACHING

Teaching Assistant , UC San Diego COGS188 AI Algorithms, COGS108 Data Science in Practice.	2021
Course Staff , Carleton College CS254 Computability and Complexity, CS111 Introduction to Computer Science.	2019

AWARDS AND FELLOWSHIPS

Graduate Prize Fellowship, Halicioğlu Data Science Institute	2020-2024
Glushko Travel and Research Award, UCSD Cognitive Science	2020-2024
Roy O. Elveton Prize in Cognitive Science and Philosophy, Carleton College	2020
Google Spot Bonus, Google Geo Machine Perception	2019
Patricia V. Damon Scholarship, Carleton College	2019-2020
Phi Beta Kappa Third-Year Inductee, Carleton College	2019
Phi Beta Kappa First Year Prize, Carleton College	2018
Dean's List, Carleton College	2017, 2018, 2019
Stuebe Endowed Scholarship, Carleton College	2017-2020
National Merit Scholar, National Merit Scholarship Corporation	2016-2020

PUBLICATIONS

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- Chang, T. A.**, Tu, Z., & Bergen, B. K. (2022). The geometry of multilingual language model representations. Under review.
- Trott, S., Jones, C. R., **Chang, T. A.**, Michaelov, J., & Bergen, B. K. (2022). Do large language models know what humans know? Under review.
- Chang, T. A.**, & Bergen, B. K. (2022). Word acquisition in neural language models. *Transactions of the Association for Computational Linguistics* (TACL). Presented at ACL 2022.
- Chang, T. A.**, & Bergen, B. K. (2022). Does contextual diversity hinder early word acquisition? *Proceedings of the 44th Annual Conference of the Cognitive Science Society* (CogSci, oral).
- Jones, C. R., **Chang, T. A.**, Coulson, S., Michaelov, J., Trott, S., & Bergen, B. K. (2022). Distributional semantics still can't account for affordances. *Proceedings of the 44th Annual Conference of the Cognitive Science Society* (CogSci, oral).
- Chang, T. A.**, Xu, Y., Xu, W., & Tu, Z. (2021). Convolutions and self-attention: Re-interpreting relative positions in pre-trained language models. *Proceedings of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing* (ACL-IJCNLP).
- Xu, Y., Xu, W., **Chang, T. A.**, & Tu, Z. (2021). Co-scale conv-attentional image transformers. *Proceedings of the IEEE/CVF International Conference on Computer Vision* (ICCV, oral).
- Chang, T. A.**, & Rafferty, A. N. (2020). Encodings of source syntax: Similarities in NMT representations across target languages. *Proceedings of the 5th Workshop on Representation Learning for NLP* (workshop at ACL).

OTHER WORK

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- Chang, T. A.** (2020). Emergence of hierarchical syntax in neural machine translation. *Carleton Digital Commons*. Undergraduate thesis, Carleton College Cognitive Science. With distinction.
- Chang, T. A.** (2020). Topology of second order tensor fields. *Carleton Digital Commons*. Undergraduate thesis, Carleton College Mathematics and Statistics.

SERVICE

PNAS reviewer (Proceedings of the National Academy of Sciences)	2022
EMNLP conference reviewer (Empirical Methods in NLP)	2022
CogSci conference reviewer (Cognitive Science Society)	2022
ICLR volunteer (International Conference on Learning Representations)	2022
ACL conference volunteer (Association for Computational Linguistics)	2020, 2021, 2022
EMNLP conference volunteer (Empirical Methods in NLP)	2020
Carleton Alumni Relations Office, student supervisor	2017-2020
Carleton Alumni Relations Office, student caller	2016-2017
Carleton Documentary Club, president and founder	2016-2018