Michael Sullivan

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Education

PhD in Linguistics *August 2020 - June 2025*
Semantics/Pragmatics Track
University at Buffalo
Thesis: Language Modeling over Logical Forms

MS in Computer Science and Engineering *August 2023 - June 2024*
Research/Honors Track
University at Buffalo
MS Project: Probing NLI Models with External Negation

BA in Linguistics with Research Distinction *August 2016 - May 2019*
The Ohio State University
Minors: Spanish, German
Thesis: A Nondeterministically-Enumerated Categorial Grammar Analysis of Croatian and English Passive Constructions

Research Interests

Logical Reasoning with LLMs

LLM Agents/Reinforcement Learning

(Neurosymbolic) NLP/NLU

Formal Semantics

Academic Positions

Postdoctoral Researcher *August 2024 - Present*
Saarland University

Industry Positions

NLP Research Intern *May 2023 - August 2023*
BlueHalo LLC

Research Groups

Computational Linguistics Group (Dr. Alexander Koller) *August 2024 - Present*
Saarland University *Member*

NLP Research Group (Dr. Rohini Srihari) *March 2023 - May 2024*
University at Buffalo *Member*

BERT/Distributional Semantics Lab *January 2021 - May 2024*
University at Buffalo *Coordinator*

Syntax/Semantics Lab (Dr. JP Koenig, Dr. Rui Chaves) *August 2020 - May 2024*
University at Buffalo *Member*

Service

LangLunches Talk Series Organizing Committee *April 2024 - Present*
Saarland University *Member*

Erasmus Mundus LCT Summer School Hackathon *August 28, 2024*
Saarland University *Jury Member*

Graduate Linguistics Association *August 2022 - August 2023*
University at Buffalo *Secretary*

Workshops

Distributed Machine Learning *September 25, 2023*
University at Buffalo CSE Fall 2023 Workshop Series *Speaker*

PyTorch Tutorial *September 22, 2023*
University at Buffalo CSE Fall 2023 Workshop Series *Event Manager*

Teaching (Instructor of Record)

Semantic Theory *Summer 2025*
Saarland University

Seminar: Graph Deep Learning for NLP *Winter 2024/25*
Saarland University

Software Project: Pretraining Language Models *Winter 2024/25*
Saarland University

Introduction to Linguistic Analysis (LIN 205) *Fall 2022*
University at Buffalo

Introduction to Linguistic Analysis (LIN 205) *Spring 2022*
University at Buffalo

Advising

Luisa Geiger *(Advisor, Saarland University, 2025)*
Investigating Logical Consistency in Automatically Generated Sewing Instructions *(MSc Thesis)*

Publications

Michael Sullivan, Mareike Hartmann, and Alexander Koller (2025). Procedural Environment Generation for Tool-Use Agents. In *Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing* (in print).

Nicola Horst, Davide Mazzaccara, Antonia Schmidt, Michael Sullivan, Filippo Momentè, Luca Franceschetti, Philipp Sadler, Sherzod Hakimov, Alberto Testoni, Raffaella Bernardi, Raquel Fernández, Alexander Koller, Oliver Lemon, David Schlangen, Mario Giulianelli, and Alessandro Suglia (2025). Playpen: An Environment for Exploring Learning Through Conversational Interaction. In *Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing* (in print).

Luisa Geiger, Mareike Hartmann, Michael Sullivan, and Alexander Koller (2025). Evaluating Spatiotemporal Consistency in Automatically Generated Sewing Instructions. In *Findings of the Association for Computational Linguistics: ACL 2025*. In *Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing* (in print).

Michael Sullivan (2025). Exploring Graph Representations of Logical Forms for Language Modeling. In *Findings of the Association for Computational Linguistics: ACL 2025*.

Michael Sullivan (2025). *Language Modeling over Logical Forms* (Doctoral dissertation, University at Buffalo).

Michael Sullivan (2024). It is not True that Transformers are Inductive Learners: Probing NLI Models with External Negation. In *Proceedings of the 18th Conference of the European Chapter of the Association for Computational Linguistics (Volume 1: Long Papers)*, 1924-1945.

Michael Sullivan, Navid Madani, Sougata Saha, and Rohini Srihari (2023). Positional Transformers for Claim Span Identification. In *Forum for Information Retrieval Evaluation (Working Notes)*.

Sougata Saha, Michael Sullivan, and Rohini Srihari (2023). Hate Speech Detection in Low Resource Indo-Aryan Languages. In *Forum for Information Retrieval Evaluation (Working Notes)*.

Michael Sullivan, Mohammed N. Yasin, and Cassandra L. Jacobs (2023). University at Buffalo at SemEval-2023 Task 11: MASDA–Modelling Annotator Sensibilities through DisAggregation. In *Proceedings of the The 17th International Workshop on Semantic Evaluation (SemEval-2023)*.
Nominated for Best System Paper Award at SemEval 2023

Michael Sullivan (2023). Formal-Logical Distributional Semantics: Applications to Property Inference. In *Workshop on Knowledge Augmented Methods for Natural Language Processing at AAAI 2023*.