

# Michael Sullivan

*E-mail:* msullivan@lst.uni-saarland.de \* *Telephone number:* +49 151 20034341

*Website:* mjs227.github.io/home/ \* *GitHub:* mjs227

## Education

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<b>PhD in Linguistics</b> <i>Semantics/Pragmatics Track</i> <i>University at Buffalo</i> <i>Thesis:</i> Language Modeling over Logical Forms	<i>August 2020 - June 2025</i>
<b>MS in Computer Science and Engineering</b> <i>Research/Honors Track</i> <i>University at Buffalo</i> <i>MS Project:</i> Probing NLI Models with External Negation	<i>August 2023 - June 2024</i>
<b>BA in Linguistics with Research Distinction</b> <i>The Ohio State University</i> <i>Minors:</i> Spanish, German <i>Thesis:</i> A Nondeterministically-Enumerated Categorical Grammar Analysis of Croatian and English Passive Constructions	<i>August 2016 - May 2019</i>

## Research Interests

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Logical Reasoning with LLMs  
LLM Agents/Reinforcement Learning  
(Neurosymbolic) NLP/NLU  
Formal Semantics

## Academic Positions

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<b>Postdoctoral Researcher</b> <i>Saarland University</i>	<i>August 2024 - Present</i>
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## Industry Positions

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<b>NLP Research Intern</b> <i>BlueHalo LLC</i>	<i>May 2023 - August 2023</i>
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## Research Groups

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<b>Computational Linguistics Group (Dr. Alexander Koller)</b> <i>Saarland University</i>	<i>August 2024 - Present</i> <i>Member</i>
<b>NLP Research Group (Dr. Rohini Srihari)</b> <i>University at Buffalo</i>	<i>March 2023 - May 2024</i> <i>Member</i>

**BERT/Distributional Semantics Lab**  
*University at Buffalo*

*January 2021 - May 2024*  
*Coordinator*

**Syntax/Semantics Lab (Dr. JP Koenig, Dr. Rui Chaves)**  
*University at Buffalo*

*August 2020 - May 2024*  
*Member*

### *Service*

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**LangLunches Talk Series Organizing Committee**  
*Saarland University*

*April 2024 - Present*  
*Member*

**Erasmus Mundus LCT Summer School Hackathon**  
*Saarland University*

*August 28, 2024*  
*Jury Member*

**Graduate Linguistics Association**  
*University at Buffalo*

*August 2022 - August 2023*  
*Secretary*

### *Workshops*

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**Distributed Machine Learning**  
*University at Buffalo CSE Fall 2023 Workshop Series*

*September 25, 2023*  
*Speaker*

**PyTorch Tutorial**  
*University at Buffalo CSE Fall 2023 Workshop Series*

*September 22, 2023*  
*Event Manager*

### *Teaching (Instructor of Record)*

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**Semantic Theory**  
*Saarland University*

*Summer 2025*

**Seminar: Graph Deep Learning for NLP**  
*Saarland University*

*Winter 2024/25*

**Software Project: Pretraining Language Models**  
*Saarland University*

*Winter 2024/25*

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

*Fall 2022*

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

*Spring 2022*

**Luisa Geiger**

(Advisor, Saarland University, 2025)

*Investigating Logical Consistency in Automatically Generated Sewing Instructions* (MSc Thesis)

## Publications

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Michael Sullivan, Mareike Hartmann, and Alexander Koller (2025). Procedural Environment Generation for Tool-Use Agents. In *Proceedings of the 2025 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 2025 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 *Proceedings of the 2025 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*.