

IWCS 2021

**Natural Logic Meets Machine Learning (NALOMA)**

**Proceedings of the 1st and 2nd Workshops**

June 16, 2021

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209 N. Eighth Street  
Stroudsburg, PA 18360  
USA  
Tel: +1-570-476-8006  
Fax: +1-570-476-0860  
[acl@aclweb.org](mailto:acl@aclweb.org)

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## Preface

This volume consists of papers presented at the first and second workshops entitled NATural LOGic Meets MACHine Learning (NALOMA). Both workshops were held online; the first with the Web Summer School in Logic, Language, and Information (WeSLLI) in 2020, and the second with the 14th International Conference on Computational Semantics (IWCS) in 2021.

NALOMA aims to bridge the gap between machine learning/deep learning and symbolic/logic-based approaches to Natural Language Inference (NLI), and it is one of the only workshops organized to do so. The workshop also lays focus on theoretical notions of NLI which influence the way approaches to NLI can and should operate.

We thank everyone who submitted papers to the meeting, including the authors who submitted non-archival extended abstracts. These contributions are not part of the proceedings but can be found within the schedule and on our website (<https://typo.uni-konstanz.de/naloma21/>) The meetings were enriched by the inspiring talks of our invited speakers: Lauri Karttunen and Ignacio Cases, Ellie Pavlick, and Mark Steedman, in 2020; Vered Shwartz, and Benjamin Van Durme in 2021.

We also thank all and everyone who served on the program committee (most served twice): Lasha Abziniadize, Stergios Chatzikyriakidis, Katrin Erk, Hai Hu, Thomas Icard, Valeria de Paiva, and Hitomi Yanaka. We are also thankful to the Research Unit FOR 2111 "Questions at the Interfaces" of the University of Konstanz, funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation), for its support and for hosting our web pages, and also the Indiana University Program in Pure and Applied Logic. The meeting would not have been possible without the encouragement and organizational support that we received from Sophia Malamud and James Pustejovsky in 2020, and from Rik van Noord and Lasha Abziniadize in 2021.

When people combine research communities, the intent is not merely to talk together but also to find joint intellectual projects. NALOMA's parents are logic and symbolic AI on one side, and machine learning on the other side. As we welcome NALOMA to its third year, we watch expectantly for those joint projects.

Aikaterini-Lida Kalouli and Lawrence S. Moss



**Organizers:**

Aikaterini-Lida Kalouli, University of Konstanz  
Lawrence S. Moss, Indiana University

**Program Committee:**

Lasha Abzianidze, Utrecht University  
Stergios Chatzikyriakidis, University of Gothenburg  
Katrín Erk, University of Texas at Austin  
Hai Hu, Indiana University  
Thomas Icard, Stanford University  
Valeria de Paiva, Topos Institute  
Hitomi Yanaka, Riken

**Invited Speakers:**2020

Lauri Karttunen and Ignacio Cases, Stanford University  
Ellie Pavlick, Brown University  
Mark Steedman, University of Edinburgh

2021

Benjamin Van Durme, Johns Hopkins University  
Vered Shwartz, Allen Institute for AI (AI2) / University of Washington



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# Workshop Program NALOMA'20

## Sunday, July 12, 2020

4:20–4:30     *Opening Remarks*  
Larry Moss

4:30–5:30     *Invited Talk: Reasoning with Implicatives: Modular and Compositional Learning for Language Understanding*  
Lauri Karttunen and Ignacio Cases

**5:40–6:20     *Research Exchange***

## Monday, July 13, 2020

8:45–9:20     *Learning General Event Schemas with Episodic Logic*  
Lane Lawley, Benjamin Kuehnert and Lenhart Schubert

9:20–9:55     *Applied Medical Code Mapping with Character-based Deep Learning Models and Word-based Logic*  
John Langton and Krishna Srihasam

**9:55–10:10     *Coffee Break***

10:10–10:45     *Learning lexical knowledge with Natural Tableau*  
Lasha Abzianidze

## Tuesday, July 14, 2020

8:45–9:45     *Invited Talk: Linguistic Semantics and Contemporary NLI*  
Mark Steedman

**9:45–10:00     *Coffee Break***

10:00–10:45     *Formalizations and Implementations of Monotonicity Reasoning*  
Larry Moss

**Wednesday, July 15, 2020**

8:45–9:20 *Investigating the Generalization Ability of Neural Models through Monotonicity Reasoning*  
Hitomi Yanaka

9:20–9:55 *Attentive Tree-structured Network for Monotonicity Reasoning*  
Zeming Chen

**9:55–10:10** *Coffee Break*

10:10–10:45 *Using Monotonicity for Natural Language Inference*  
Hai Hu

**Thursday, July 16, 2020**

8:45–9:45 *Invited Talk: "I don't know what you mean" semantics is hard: Challenges in evaluation of semantic phenomena*  
Ellie Pavlick

**9:45–10:00** *Coffee Break*

10:00–10:45 *NLI Data and Annotations: a Look Behind the Scenes*  
Aikaterini-Lida Kalouli

**Friday, July 17, 2020**

8:45–9:20 *Transferring Representations of Logical Connectives*  
Aaron Traylor, Ellie Pavlick and Roman Feiman

9:20–9:55 *Monotonic Inference for Underspecified Episodic Logic*  
Gene Kim, Mandar Juvekar and Lenhart Schubert

**9:55–10:45** *Panel discussion and Closing remarks*

# Workshop Program NALOMA'21

## Wednesday, June 16, 2021

- 14:30–14:45 *Welcome and Opening Remarks*  
Aikaterini-Lida Kalouli and Larry Moss
- 14:45–15:10 *Do Neural Models Learn Transitivity of Veridical Inference?*  
Hitomi Yanaka, Koji Mineshima and Kentaro Inui
- 15:10–15:35 *Does Logic-based Reasoning Work for Dutch?*  
Lasha Abzianidze and Konstantinos Kogkalidis
- 15:35–16:00 *Supporting Context Monotonicity Abstractions in Neural NLI Models*  
Julia Rozanova, Deborah Ferreira, Mokanarangan Thayaparan, Marco Valentino and André Freitas
- 16:00–16:45 *Invited Talk: Expanding Natural Language Inference*  
Benjamin Van Durme
- 16:45–17:15 (Coffee/Lunch/Dinner) Break**
- 17:15–17:40 *Bayesian Classification and Inference in a Probabilistic Type Theory with Records*  
Staffan Larsson and Robin Cooper
- 17:40–18:05 *From compositional semantics to Bayesian pragmatics via logical inference*  
Julian Grove, Jean-Philippe Bernardy and Stergios Chatzikyriakidis
- 18:05–18:30 *A (Mostly) Symbolic System for Monotonic Inference with Unscoped Episodic Logical Forms*  
Gene Kim, Mandar Juvekar, Junis Ekmekciu, Viet Duong and Lenhart Schubert
- 18:30–19:15 *Invited Talk: Natural Language Inference: Challenges and Opportunities*  
Vered Shwartz
- 19:15–20:00 Panel discussion and Closing remarks**

