NAACL-HLT 2012

SIAC 2012
Workshop on Semantic Interpretation in an Actionable Context

Proceedings of the Workshop

June 8, 2012
Montréal, Canada

Introduction

Effective and seamless Human-Computer interaction using natural language is arguably one of the major challenges of natural language processing and artificial intelligence in general. Making significant progress in developing natural language capabilities that support this level of interaction has countless applications and is bound to attract many researchers from several AI fields: from robotics to games to the social sciences.

From the natural language processing perspective the problem is often formulated as a translation task: mapping between natural language input and a logical output language that can be executed in the domain of interest. Unlike shallow approaches for semantic interpretation, which provide an incomplete or underspecified interpretation of the natural language input, the output of a formal semantic interpreter is expected to provide complete meaning representation that can be executed directly by a computer system. Examples of such systems include robotic control, database access, game playing and more.

Current approaches to this task take a data driven approach, in which a learning algorithm is given a set of natural language sentences as input and their corresponding logical meaning representation and learns a statistical semantic parser: a set of parameterized rules mapping lexical items and syntactic patterns to a logical formula.

In recent years this framework was challenged by an exciting line of research, advocating that semantic interpretation should not be studied in isolation, but rather in the context of the external environment (or computer system) which provides the semantic context for interpretation. This line of research comprises several directions, focusing on grounded semantic representations, flexible semantic interpretation models, and alternative learning protocols driven by indirect supervision signals. This progress has contributed to expanding the scope of semantic interpretation, introduced new domains and tasks and revealed that it is possible to make progress in this direction with reduced manual effort. In particular, it resulted in a wide range of models, learning protocols, learning tasks, and semantic formalisms that, while clearly related, are not directly comparable and understood under a single framework.

The workshop consists mostly of invited speakers, but will also include several novel works. The goal of this workshop is to provide researchers interested in the field with an opportunity to exchange ideas, discuss other perspectives, and formulate a shared vision for this research direction.

Organizers:

Dan Goldwasser, University of Illinois at Urbana Champaign (USA)
Regina Barzilay, Massachusetts Institute of Technology (USA)
Dan Roth, University of Illinois at Urbana Champaign (USA)

Program Committee:

Raymond Mooney, University of Texas at Austin (USA)
Luke Zettlemoyer, University of Washington (USA)
Jacob Eisenstein, Georgia Tech (USA)
Alexander Koller, University of Potsdam (Germany)
Percy Liang, Google (USA)
Wei Lu, University of Illinois at Urbana Champaign (USA)
Nick Roy, Massachusetts Institute of Technology (USA)
Jeffrey Mark Siskind, Purdue University (USA)
Jason Weston, Google (USA)

Additional Reviewers:

Rajhans Samdani, University of Illinois at Urbana Champaign (USA)

Invited Speaker:

Raymond Mooney, University of Texas at Austin (USA)
Luke Zettlemoyer, University of Washington (USA)
Yoshua Bengio, University of Montréal (Canada)
Julia Hockenmaier, University of Illinois at Urbana Champaign (USA)
Dan Roth, University of Illinois at Urbana Champaign (USA)
Mehdi Hafezi Manshadi, University of Rochester (USA)

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Conference Program

June 8

9:00   **Morning Session**

Workshop Introduction
Workshop organizers

Learning to Interpret Natural Language Instructions
Monica Babes-Vroman, James MacGlashan, Ruoyuan Gao, Kevin Winner, Richard Adjogah, Marie desJardins, Michael Littman and Smaranda Muresan

Toward Learning Perceptually Grounded Word Meanings from Unaligned Parallel Data
Stefanie Tellex, Pratiksha Thaker, Josh Joseph, and Nicholas Roy

Invited Talk: Integrating Natural Language Programming and Programming by Demonstration
Mehdi Hafezi Manshadi

10:30   **Coffee Break**

11:00   **Morning Session 2**

Invited Talk: Learning to Interpret Natural Language Navigation Instructions from Observation
Raymond Mooney

12:00   **Lunch**

13:00   **Afternoon Session**

Invited Talk:
Luke Zettlemoyer

Invited Talk:
Yoshua Bengio

15:00   **Coffee Break**

15:30   **Afternoon Session 2**

Invited Talk:
Julia Hockenmaier

Invited Talk:
Dan Roth