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Michael Glass

Professional Profile

My research interests are in lightly supervised methods in natural language processing and probabilistic logical reasoning. I am particularly focused on bridging the gap between formal representation and reasoning and unstructured text. I have worked on a number of tasks in these fields including:

- Entity Extraction and Named Entity Recognition
- Relation Extraction including entity-event relations and event-event relations
- Co-reference Resolution and its impact on semantic interpretation
- Question Answering, including novel questions
- Knowledge Base Construction and Ontology Design
- Heuristic Inference
- Probabilistic Inference with Markov Logic Networks, Imperatively Defined Factor Graphs and Focused Grounding with MaxWalkSat
- Part-of-Speech Induction
- Crowd-Sourcing using Amazon Mechanical Turk for Textual Entailment and similarity judgments
- Unsupervised Machine Learning
 - Clustering
 - Distributional Analysis
 - Dimensionality Reductions
 - Expectation Maximization

Education

University of Texas at Austin

Bachelor of Science in Computer Science, Highest Honors. (8/25/1999 - 8/20/2001)

Master of Science in Computer Science. (8/25/2004 - 5/22/2010)

Pursuing Ph.D. in Computer Science (5/22/2010 - Present)

Interests

Natural Language Processing

Probabilistic Graphical Models

Unsupervised Machine Learning

Artificial Intelligence

Publications

Michael Glass and Ken Barker. Bootstrapping Relation Extraction Using Parallel News Articles. *IJCAI Workshop on Learning by Reading and its Applications in Intelligent Question-Answering*, 2011.

Michael Glass, Ken Barker, Rekha Kumar, Guhan Ravi, and Bruce Porter. Constructing a semantic interpreter using distributional analysis. *Proceedings of the Eighth Conference of the Pacific Association for Computational Linguistics*, 2009.

Michael Glass and Bruce Porter. Improving semantic integration by learning semantic interpretation rules. *AAAI Spring Symposium*, 2008.

Ken Barker, Bhalchandra Agashe, Shaw Yi Chaw, James Fan, Michael Glass, Jerry Hobbs, Eduard Hovy, David Israel, Doo Soon Kim, Rutu Mulkar, Sourabh Patwardhan, Bruce Porter, Dan Tecuci, and Peter Yeh. Learning by reading: A prototype system, performance baseline and lessons learned. In *Proceedings of Twenty-Second National Conference on Artificial Intelligence*, 2007.

Research Experience

Machine Reading Project

Research Assistant with UT Austin under Bruce Porter from 2009-Present

A DARPA project to develop an automated reading system to serve as a bridge between the knowledge in natural texts and formal reasoning systems. I developed SINDA (Semantic INterpretation with Distributional Analysis), a new approach for creating a semantic interpreter. SINDA supplements a small seed set of syntactic-to-semantic mappings with additional mappings induced from an unannotated corpus. The probabilistic outputs of the semantic interpretation components and the constraints and rules of the knowledge base create a probability distribution over possible interpretations. I developed a joint inference system to select the most likely interpretation.

IBM Watson Research Center

Research Internship from 5/23/2011-9/19/2011

Adapted a bootstrapping method based on seed syntactic to semantic mappings to use annotation as the only source of supervision and constructed a learning curve for direct comparison to supervised systems. Developed a new technique for entity recognition in the medical domain: structured term recognition.

Learning By Reading

Research Assistant with UT Austin under Bruce Porter 2008

A DARPA seedling project to explore extending a knowledge base from expository text. I worked on the evaluation and analysis of the Möbius prototype system.

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Research Assistant with UT Austin under Bruce Porter 2007

A Vulcan Inc. project to develop a “Digital Aristotle”, a knowledge based program capable of answering novel questions in biology, chemistry and physics. The knowledge was authored by subject matter experts with little training in logic or representation.

Boeing Phantom Works

Research Internship from 6/10/2005-9/26/2005

Developed a new implementation of a “resemblance check” for natural language interpretation. This allows a semantic interpreter to reject a candidate interpretation that does not conform to the expectations of the knowledge base.

Software Development Experience

Wayport

Software Developer from 2/15/2004-8/13/2004.

Developed internal and external reporting and tracking tools primarily used in the installation and evaluation of wireless connectivity in McDonald's.

ClearOrbit

Software Developer from 8/13/2001-10/1/2003.

Developed and maintained ClearOrbit's application server architecture including the custom web server, telnet server and adapter, web services architecture. device integration and concurrent programs architecture.

- **Applied Materials OnlinePO**

Developed and assisted implementation of a scalable infrastructure for a multi-million dollar, online supplier collaboration system with one hundred and sixty five suppliers and approximately one thousand users. Developed and implemented the automated interface to the supplier collaboration system.

- **Alcoa Supply Chain Management**

Assisted development of a scalable printing solution for the world's largest installation of Oracle.

Skills

Languages

Java, Lisp, C and C++, C#, PL/SQL, SQL, UNIX Shell scripts, assembly

Operating Systems

Linux, UNIX, Windows

Software

Eclipse, Oracle, mysql, Apache, Microsoft Visual Studio .NET, make, svn, CVS, L^AT_EX

October 12, 2011