

# EMNLP 16 Workshop on Structured Prediction for NLP

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# Why structured prediction

- ❖ NLP problems are structural
  - ❖ Output variables are inter-correlated
  - ❖ Need joint predictions
- ❖ Traditional approaches
  - ❖ Graphical model approaches
    - ❖ E.g., Probabilistic graphical models, structured perceptron
  - ❖ Sequence of decisions
    - ❖ E.g., incremental perceptron, L2S, transition-based methods

# Recent trends

- ❖ Landscape of methods in Deep $\cap$ Structure
  - ❖ Deep learning/hidden representation  
e.g., seq2seq, RNN
  - ❖ Deep features into factors, traditional factor graph inference  
e.g., LSTM+CRF, graph transformer networks
  - ❖ Globally optimized transitional-based approaches  
e.g., beam-search seq2seq, SyntaxNet
  - ❖ ...

# Core issues

- ❖ What is the right way to encode structures?
- ❖ Empirical/theoretical performance analysis
- ❖ How to implement?
  - ❖ e.g., programming abstraction, hardware, etc.
- ❖ What should I teach in my next “machine learning for NLP” course?
- ❖ Do we still need structured approaches?
  - ❖ When/where structures are needed?

# Deep $\cap$ Structure Reading Group

- ❖ Initiated by an impromptu meeting at **NAACL 16**
- ❖ Followed by another meeting at **ICML 16**
- ❖  $\Rightarrow$  A reading group focusing on Deep $\cap$ Structure

mailing list:

<https://lists.umiacs.umd.edu/mailman/listinfo/deepstructure>

# Why this workshop?

- ❖ Venue to discuss these core issues
- ❖ Invite people outside core NLP
  - ❖ ML, CV, Deep learning, Robotics
- ❖ Finding new test-beds
  - ❖ More parsing?
- ❖ Reevaluate conventional wisdom

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**Hal Daumé III**

@haldaume3



Following



if you're at [#emnlp2016](#) structured prediction workshop and have controversial questions you want me to ask the panel, reply here or DM me



Dzmitry Bahdanau

University of Montreal



Yejin Choi

University of  
Washington



Sebastian Riedel

UCL



Noah Smith

University of  
Washington

# Invited talks



Kristina Toutanova  
Microsoft Research



Dhruv Batra  
Georgia Tech



David Grangier  
Facebook



Dzmitry Bahdanau  
University of Montreal



# Contributed Talks/Posters

Paper	Authors
Unsupervised Neural Hidden Markov Models	Ke M. Tran, Yonatan Bisk, Ashish Vaswani, Daniel Marcu, and Kevin Knight
Inside-Outside and Forward-Backward Algorithms Are Just Backprop	Jason Eisner
Research on attention memory networks as a model for learning natural language inference	Zhuang Liu, Degen Huang, Jing Zhang, and Kaiyu Huang
Joint Model of Rhetorical Discourse Structure and Summarization	Naman Goyal and Jacob Eisenstein
Posterior regularization for Joint Modeling of Multiple Structured Prediction Tasks	Karthik Goyal and Chris Dyer
A Study of Imitation Learning Methods for Semantic Role Labeling	Travis Wolfe, Mark Dredze, and Benjamin Van Durme
Introducing DRAIL -- a Step Towards Declarative Deep Relational Learning	Xiao Zhang, Maria Leonor Pacheco, Chang Li, and Dan Goldwasser
The Structured Weighted Violations Perceptron Algorithm	Rotem Dror and Roi Reichart

# Schedule: morning

9:00–9:15: Welcome

9:15–10:00: Invited Talk: Kristina Toutanova

10:00–10:30: Contributed Talk: Jason Eisner

10:30–11:00: Coffee Break

11:00–11:45: Invited Talk: Dhruv Batra

11:45–12:30: Panel: Moderator - Hal Daumé III

# Schedule: afternoon

Please set up the posters during lunch time.

14:00–15:00: Posters

15:00–15:30 David Grangier

15:30–16:00: Coffee Break

16:00–16:45: Invited Talk: Dzmitry Bahdanau

16:45–17:15: Contributed Talk: Yonatan Bisk

17:30: Closing

# Thanks for committee members' support

Amir Globerson

Andre Martins

Chris Dyer

Dan Roth

David Sontag

Hal Daumé III

Ivan Titov

Janardhan Rao Doppa

Jason Eisner

Kevin Gimpel

Luke Zettlemoyer

Matt Gormley

Michael Collins

Mohit Bansal

Ofer Meshi

Ryan McDonald

Scott Yih

Sebastian Riedel

Shay Cohen

Yoav Artzi

Yuan Zhang

Tao Lei

# Next year

- ❖ 2<sup>nd</sup> Workshop on Structured Prediction for NLP
- ❖ EMNLP 2017 @ Copenhagen, Denmark

