

# Mohit Bansal

Assistant Professor, Computer Science, UNC Chapel Hill

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Google Scholar Profile

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## Research Interests

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Statistical Natural Language Processing (NLP), Machine Learning, Multimodal Artificial Intelligence.  
Current focus: Multimodal, grounded, and embodied semantics (i.e., language with vision and speech, for robotics), human-like language generation and Q&A/dialogue, and interpretable and structured deep learning.

## Education

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### **University of California, Berkeley** (2008-2013)

Ph.D. in Computer Science

Thesis: Surface Web Semantics for Structured Natural Language Processing

Advisor: Dan Klein. Committee members: Dan Klein, Marti Hearst, Line Mikkelsen, Nelson Morgan

### **University of California, Berkeley** (2012)

Master of Science (M.S.) in Computer Science

Thesis: An All-Fragments Grammar for Simple and Accurate Parsing

Advisor: Dan Klein

### **Indian Institute of Technology, Kanpur** (2004-2008)

Bachelor of Technology (B.Tech.) in Computer Science and Engineering

GPA: 3.96/4.00 (Institute and Department Rank 2)

### **Cornell University** (Summer 2007)

CS490 (Independent Research and Reading)

GPA: 4.00/4.00

Advisors: Lillian Lee, Claire Cardie

## Honors, Awards, and Funding

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'Area Chair Favorites' Paper Award, COLING (2018)

Adobe Faculty Research Award (2018)

Verisk AI Faculty Research Award (2018)

DARPA Young Faculty Award (2017)

Facebook ParlAI Faculty Research Award (2017)

Outstanding Paper Award, ACL (2017)

Amazon AWS Research Cloud Credits (2017)

UNC University Research Council (URC) Small Grant Program (2017)

Google Faculty Research Award (2016)

NVidia Hardware Grant (2016)

UNC Junior Faculty Development Award (2016)

Best Paper Award, ACL Representation Learning for NLP Workshop (2016)

Bloomberg Data Science Research Grant (2016)  
NVidia Paper Award, NIPS Multimodal Machine Learning Workshop (2015)  
NVidia Hardware Grant (2015)  
Google Faculty Research Award (2014)  
IBM Faculty Award (2014)  
Best Paper Award Honorable Mention (top-5 paper), ACL (2014)  
Best Reviewer Award, NAACL (2018), NAACL (2015), EMNLP (2012)  
Outstanding Graduate Student Instructor Award, UC Berkeley (2011-2012)  
Qualcomm Innovation Fellowship (2011)  
Tong Leong Lim Pre-Doctoral Prize, EECS, UC Berkeley (2011)  
Cornell Summer Research Fellowship, CS, Cornell University (2007)  
INLAKS Fellowship – Award of Excellence at IITs (2005-2008)  
OPJEMS Fellowship, IIT Kanpur (2007-2008)  
Academic Excellence Award, IIT Kanpur (2004-2005 and 2005-2006)  
Pandit Balajee G. H. Memorial Scholarship, IIT Kanpur (2004-2005)  
IIT Joint Entrance Examination All-India-Rank 47 in 200,000 (2004)

## Research and Work Experience

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**UNC Chapel Hill, Computer Science Dept.** (2016 – present)

Assistant Professor

**Toyota Technological Institute at Chicago** (2013 – 2016)

Research Assistant Professor (3-year endowed position)

**IARPA Babel Project**, Swordfish team (Feb 2014 – June 2014)

Member/Consultant

**University of California, Berkeley** (2008 – 2013)

Graduate Student Researcher (Advisor: Dan Klein)

**Google Research**, Mountain View (Summer 2011)

Research Intern (with John DeNero and Dekang Lin)

**Microsoft Research**, Redmond (Summer 2010)

Research Intern (with Chris Quirk and Bob Moore)

**Cornell University**, CS division (Summer 2007)

Research Intern (with Lillian Lee and Claire Cardie)

## Publications

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(most conferences below, including short paper proceedings have a <25% acceptance rate; here is the google scholar based list of top-ranked conferences in [NLP], [vision], [AI/ML], [robotics])

### Peer-reviewed Publications:

58. Dynamic Multi-Level, Multi-Task Learning for Sentence Simplification  
Han Guo, Ramakanth Pasunuru and **Mohit Bansal**  
Proceedings of **COLING 2018**. [pdf]  
(*'Area Chair Favorites' Paper Award*)

57. Polite Dialogue Generation Without Parallel Data  
Tong Niu and **Mohit Bansal**  
Proceedings of **TACL 2018**. [pdf]
56. Fast Abstractive Summarization with Reinforce-Selected Sentence Rewriting  
Yen-Chun Chen and **Mohit Bansal**  
Proceedings of **ACL 2018**. [pdf]
55. Soft, Layer-Specific Multi-Task Summarization with Entailment and Question Generation  
Han Guo, Ramakanth Pasunuru, and **Mohit Bansal**  
Proceedings of **ACL 2018**. [pdf]
54. #MeToo: Neural Detection and Explanation of Language in Personal Abuse Stories  
Sweta Karlekar and **Mohit Bansal**  
Proceedings of **WiNLP 2018 (Widening NLP Workshop), NAACL 2018**. [pdf]
53. Object Ordering with Bidirectional Matchings for Visual Reasoning  
Hao Tan and **Mohit Bansal**  
Proceedings of **NAACL 2018** (short papers). [pdf]
52. Multi-Reward Reinforced Summarization with Saliency and Entailment  
Ramakanth Pasunuru and **Mohit Bansal**  
Proceedings of **NAACL 2018** (short papers). [pdf]
51. Detecting Linguistic Characteristics of Alzheimer’s Dementia by Interpreting Neural Models  
Sweta Karlekar, Tong Niu, and **Mohit Bansal**  
Proceedings of **NAACL 2018** (short papers). [pdf]
50. Robust Machine Comprehension Models via Adversarial Training  
Yicheng Wang and **Mohit Bansal**  
Proceedings of **NAACL 2018** (short papers). [pdf]
49. Punny Captions: Witty Wordplay in Image Descriptions  
Arjun Chandrasekaran, Devi Parikh, and **Mohit Bansal**  
Proceedings of **NAACL 2018** (short papers). [pdf]
48. Joint Modeling of Text and Acoustic-Prosodic Cues for Neural Parsing  
Trang Tran, Shubham Toshniwal, **Mohit Bansal**, Kevin Gimpel, Karen Livescu, and Mari Ostendorf  
Proceedings of **NAACL 2018**. [pdf]
47. MAttNet: Modular Attention Network for Referring Expression Comprehension  
Licheng Yu, Zhe Lin, Xiaohui Shen, Jimei Yang, Xin Lu, **Mohit Bansal**, and Tamara Berg  
Proceedings of **CVPR 2018**. [pdf][demo]
46. Source-Target Inference Models for Spatial Instruction Understanding  
Hao Tan and **Mohit Bansal**  
Proceedings of **AAAI 2018**. [pdf]
45. Retweet Wars: Tweet Popularity Prediction via Multimodal Regression  
Ke Wang, **Mohit Bansal**, and Jan-Michael Frahm  
Proceedings of **WACV 2018**. [pdf]
44. Interactive-Length Multi-Task Video Captioning with Cooperative Feedback  
Han Guo, Ramakanth Pasunuru, and **Mohit Bansal**  
Proceedings of **NIPS 2017** (demo papers).
43. Reinforced Video Captioning with Entailment Rewards  
Ramakanth Pasunuru and **Mohit Bansal**  
Proceedings of **EMNLP 2017** (short papers). [pdf]

42. Hierarchically-Attentive RNN for Album Summarization and Storytelling  
Licheng Yu, **Mohit Bansal**, and Tamara Berg  
Proceedings of **EMNLP 2017** (short papers). [pdf]
41. Video Highlight Prediction Using Audience Chat Reactions  
Cheng-Yang Fu, Joon Lee, Mohit Bansal, and Alexander Berg  
Proceedings of **EMNLP 2017** (short papers). [pdf]
40. Shortcut-Stacked Sentence Encoders for Multi-Domain Inference  
Yixin Nie and Mohit Bansal  
Proceedings of **RepEval Workshop, EMNLP 2017**. [pdf]  
*(Top Single Model in Shared Task)*
39. Towards Improving Abstractive Summarization via Entailment Generation  
Ramakanth Pasunuru, Han Guo, and Mohit Bansal  
Proceedings of **Summarization Frontiers Workshop, EMNLP 2017**. [pdf]
38. Multi-Task Video Captioning with Video and Entailment Generation  
Ramakanth Pasunuru and **Mohit Bansal**  
Proceedings of **ACL 2017**. [pdf]  
*(Outstanding Paper Award; 1.5% accep. rate)*
37. A Joint Speaker-Listener-Reinforcer Model for Referring Expressions  
Licheng Yu, Hao Tan, **Mohit Bansal**, and Tamara L. Berg  
Proceedings of **CVPR 2017**. [pdf]  
*(Spotlight; 8.0% accep. rate)*
36. Navigational Instruction Generation as Inverse Reinforcement Learning with Neural Machine Translation  
Andrea F. Daniele, **Mohit Bansal**, and Matthew R. Walter  
Proceedings of **HRI 2017**. [pdf]
35. Contextual RNN-GANs for Abstract Reasoning Diagram Generation  
Arnab Ghosh, Viveka Kulharia, Amitabha Mukerjee, Vinay Namboodiri, and **Mohit Bansal**  
Proceedings of **AAAI 2017**. [pdf]
34. Coherent Dialogue with Attention-based Language Models  
Hongyuan Mei, **Mohit Bansal**, and Matthew Walter  
Proceedings of **AAAI 2017**. [pdf]
33. Interpreting Neural Networks to Improve Politeness Comprehension  
Malika Aubakirova and **Mohit Bansal**  
Proceedings of **EMNLP 2016** (short papers). [pdf]
32. Sort Story: Sorting Jumbled Images and Captions into Stories  
Harsh Agrawal, Arjun Chandrasekaran, Dhruv Batra, Devi Parikh, and **Mohit Bansal**  
Proceedings of **EMNLP 2016** (short papers). [pdf]
31. Question Relevance in VQA: Identifying Non-Visual And False-Premise Questions  
Arijit Ray, Gordon Christie, **Mohit Bansal**, Dhruv Batra, and Devi Parikh  
Proceedings of **EMNLP 2016** (short papers). [pdf]
30. Who did What: A Large-Scale Person-Centered Cloze Dataset  
Takeshi Onishi, Hai Wang, **Mohit Bansal**, Kevin Gimpel, and David McAllester  
Proceedings of **EMNLP 2016** (short papers). [pdf]
29. Charagram: Embedding Words and Sentences via Character n-grams  
John Wieting, **Mohit Bansal**, Kevin Gimpel, and Karen Livescu  
Proceedings of **EMNLP 2016**. [pdf]

28. End-to-end Relation Extraction using LSTMs on Sequences and Tree Structures  
Makoto Miwa and **Mohit Bansal**  
Proceedings of **ACL 2016**. [pdf]
27. Mapping Unseen Words to Task-Trained Embedding Spaces  
Pranava Swaroop Madhyastha, **Mohit Bansal**, Kevin Gimpel, and Karen Livescu  
Proceedings of **Workshop on Representation Learning for NLP, ACL 2016**. [pdf]  
(*Best Paper Award*)
26. What to talk about and how? Selective Generation using LSTMs with Coarse-to-Fine Alignment  
Hongyuan Mei, **Mohit Bansal**, and Matthew R. Walter  
Proceedings of **NAACL 2016**. [pdf]
25. The Role of Context Types and Dimensionality in Learning Word Embeddings  
Oren Melamud, David McClosky, Siddharth Patwardhan, and **Mohit Bansal**  
Proceedings of **NAACL 2016**. [pdf]
24. We Are Humor Beings: Understanding and Predicting Visual Humor  
Arjun Chandrasekaran, Ashwin Kalyan, Stanislaw Antol, **Mohit Bansal**, Dhruv Batra, C. Lawrence Zitnick, and Devi Parikh  
Proceedings of **CVPR 2016**. [pdf]  
(*Spotlight; 9.7% accep. rate*)
23. Towards Universal Paraphrastic Sentence Embeddings  
John Wieting, **Mohit Bansal**, Kevin Gimpel, and Karen Livescu  
Proceedings of **ICLR 2016**. [pdf]  
(*Oral; 5.7% accep. rate*)
22. Listen, Attend, and Walk: Neural Mapping of Navigational Instructions to Action Sequences  
Hongyuan Mei, **Mohit Bansal**, and Matthew R. Walter  
Proceedings of **AAAI 2016**. [pdf]  
(*NVidia Paper Award* in **NIPS 2015 Multimodal Machine Learning** workshop)
21. Machine Comprehension with Syntax, Frames, and Semantics  
Hai Wang, **Mohit Bansal**, Kevin Gimpel, and David McAllester  
Proceedings of **ACL 2015** (short papers). [pdf]
20. From Paraphrase Database to Compositional Paraphrase Model and Back  
John Wieting, **Mohit Bansal**, Kevin Gimpel, and Karen Livescu  
Proceedings of **TACL** (presented at **EMNLP 2015**). [pdf]
19. Dependency Link Embeddings: Continuous Representations of Syntactic Substructures  
**Mohit Bansal**  
Proceedings of **Workshop on Vector Space Modeling for NLP, NAACL 2015**. [pdf]  
(*selected oral*)
18. Deep Multilingual Correlation for Improved Word Embeddings  
Ang Lu, Weiran Wang, **Mohit Bansal**, Kevin Gimpel, and Karen Livescu  
Proceedings of **NAACL 2015** (short papers). [pdf]
17. A Sense-Topic Model for Word Sense Induction with Unsupervised Data Enrichment  
Jing Wang, **Mohit Bansal**, Kevin Gimpel, Brian Ziebart, and Clement Yu  
Proceedings of **TACL** (presented at **NAACL 2015**). [pdf]
16. Weakly-Supervised Learning with Cost-Augmented Contrastive Estimation  
Kevin Gimpel and **Mohit Bansal**  
Proceedings of **EMNLP 2014**. [pdf]

15. Tailoring Continuous Word Representations for Dependency Parsing  
**Mohit Bansal**, Kevin Gimpel, and Karen Livescu  
 Proceedings of **ACL 2014** (short papers). [pdf]
14. Structured Learning for Taxonomy Induction with Belief Propagation  
**Mohit Bansal**, David Burkett, Gerard de Melo, and Dan Klein  
 Proceedings of **ACL 2014**. [pdf]  
*(Best Paper Award Honorable Mention – top-5 paper)*
13. What are you talking about? Text-to-Image Coreference  
 Chen Kong, Dahua Lin, **Mohit Bansal**, Raquel Urtasun, and Sanja Fidler  
 Proceedings of **CVPR 2014**. [pdf]
12. Good, Great, Excellent: Global Inference of Semantic Intensities  
 Gerard de Melo and **Mohit Bansal**  
 Proceedings of **TACL** (presented at **ACL 2013**). [pdf]
11. Coreference Semantics from Web Features  
**Mohit Bansal** and Dan Klein  
 Proceedings of **ACL 2012**. [pdf]
10. Unsupervised Translation Sense Clustering  
**Mohit Bansal**, John DeNero, and Dekang Lin  
 Proceedings of **NAACL 2012**. [pdf]
9. Web-Scale Features for Full-Scale Parsing  
**Mohit Bansal** and Dan Klein  
 Proceedings of **ACL 2011**. [pdf]
8. Gappy Phrasal Alignment by Agreement  
**Mohit Bansal**, Chris Quirk, and Robert C. Moore  
 Proceedings of **ACL 2011**. [pdf]
7. The Surprising Variance in Shortest-Derivation Parsing  
**Mohit Bansal** and Dan Klein  
 Proceedings of **ACL 2011** (short papers). [pdf]
6. Mention Detection: Heuristics for the OntoNotes annotations  
 Jonathan K. Kummerfeld, **Mohit Bansal**, David Burkett, and Dan Klein  
 Proceedings of **CoNLL 2011** (shared task). [pdf]
5. Simple, Accurate Parsing with an All-Fragments Grammar  
**Mohit Bansal** and Dan Klein  
 Proceedings of **ACL 2010**. [pdf]
4. Efficient Parsing for Transducer Grammars  
 John DeNero, **Mohit Bansal**, Adam Pauls, and Dan Klein  
 Proceedings of **NAACL 2009**. [pdf]
3. The power of negative thinking: Exploiting label disagreement in the min-cut classification framework  
**Mohit Bansal**, Claire Cardie, and Lillian Lee  
 Proceedings of **COLING 2008** (short papers). [pdf]
2. Estimating hybrid frequency moments of data streams  
 Sumit Ganguly, **Mohit Bansal**, and Shruti Dube  
 Proceedings of **FAW 2008**, LNCS 5059, pp. 55-66.  
 Also in the Journal of Combinatorial Optimization (**JOCO**). [pdf]

1. Text Processing for Text to Speech Systems in Indian Languages  
Anand Raj, Tanuja Sarkar, Satish Pammi, Santhosh Yuvaraj, **Mohit Bansal**, SP Kishore, and Alan W Black  
Proceedings of **ISCA SSW6 2007**. [pdf]

### Theses:

1. Surface Web Semantics for Structured Natural Language Processing  
Mohit Bansal  
Ph.D. Thesis. EECS, UC Berkeley. Committee: Dan Klein (advisor), Marti Hearst, Line Mikkelsen, Nelson Morgan. [pdf]
2. An All-Fragments Grammar for Simple and Accurate Parsing  
Mohit Bansal  
M.S. Thesis. EECS, UC Berkeley. Advisor: Dan Klein. [pdf]

### Patents:

1. Techniques for Generating Translation Clusters  
John DeNero and **Mohit Bansal** (Google Research)  
Publication number: US20130275118 A1 (Oct 17, 2013).

### Teaching

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Instructor, Advanced Topics in Natural Language Processing: Conversational Models (COMP 790.139), UNC Chapel Hill, Spring 2018.

Instructor, Natural Language Processing (COMP 790.139), UNC Chapel Hill, Fall 2017.

Instructor, Advanced Topics in Natural Language Processing: Grounded Language for Robotics (COMP 790.139), UNC Chapel Hill, Spring 2017.

Instructor, Natural Language Processing (COMP 790.139), UNC Chapel Hill, Fall 2016.

Guest Lecturer, Computational Linguistics (CMSC 35050, *Instructor*: John Goldsmith), University of Chicago, Spring 2015 – ‘Automatic Taxonomy Induction’.

Guest Lecturer, Robotics and Artificial Intelligence (TTIC 31170, *Instructor*: Matthew Walter), TTI-Chicago, University of Chicago, Spring 2015 – ‘Automatic Taxonomy Induction’.

Guest Lecturer, Visual Recognition with Text (CSC 2523, *Instructor*: Sanja Fidler), University of Toronto, Winter 2015 – short course on ‘Topics, Trends, and Resources in NLP’ [slides].

GSI, Introduction to Artificial Intelligence (CS188, *Instructor*: Dan Klein), UC Berkeley, Fall 2011. Received an Outstanding Graduate Student Instructor Award by UC Berkeley for excellence in teaching.

GSI, Advanced Topics in Artificial Intelligence (CS194-10, *Instructors*: Pieter Abbeel, Dan Klein, Jitendra Malik), UC Berkeley, Spring 2009. Sole TA for new course with 30 advanced students.

### Students/Interns

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#### UNC Advisees:

Robbie Allen (UNC, PhD)  
Lisa Bauer (UNC, PhD)  
Yen-Chun Chen (UNC, MS)  
Han Guo (UNC, BS)  
Yichen Jiang (UNC, BS)  
Sweta Karlekar (UNC, BS)

Jie Lei (UNC, PhD; co-advised with Tamara Berg)  
Yixin Nie (UNC, PhD)  
Ramakanth Pasunuru (UNC, PhD)  
Hao Tan (UNC, PhD)  
Yicheng Wang (UNC, BS)  
Licheng Yu (UNC, PhD; co-advised with Tamara Berg)

Other Advisees:

Arjun Chandrasekaran (Georgia Tech, PhD; advisor = Devi Parikh) (PhD Thesis Committee Member)  
Tong Niu (Duke, MS)

Past Advisees:

Malika Aubakirova (UChicago, BS)  
Dhivya Eswaran (IIT-Madras, BTech → CMU, PhD)  
Rasool Fakoor (UT-Arlington, PhD → MSR)  
Arnab Ghosh (IIT Kanpur, BTech → Oxford, PhD)  
Yuchen He (UIUC, PhD)  
Myungin Kim (UChicago, MS)  
Zuyao Li (USC, MS → Google/Nest)  
Ang Lu (Tsinghua, BS → CMU, MS)  
Pranava S. Madhyastha (UPC Barcelona, PhD)  
Hongyuan Mei (UChicago/TTIC, MS → JHU, PhD) (MS Thesis Co-Advisor)  
Aravind L Srinivas (IIT Madras, BTech → UC Berkeley, PhD)  
Ryan Stout (UIUC, MS)  
Trang Tran (UWash, PhD)  
Jing Wang (UIC, PhD → Conversant, Scientist)  
John Wieting (UIUC/TTIC, MS → CMU, PhD)  
Zhengyang Wu (GeorgiaTech, BS)

## Professional Service

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**Area Chair:** EMNLP 2018

**Tutorial Chair:** NAACL 2018

**Area Chair (Vision, Robotics, and Grounding):** ACL 2017

**Area Chair (Machine Learning):** EMNLP 2017

**Demonstration Chair:** ACL 2017

**Tutorial Chair:** NAACL 2016

**Area Chair:** NAACL 2016

**Program Committee Member/Reviewer:**

**Conferences:** EMNLP (best reviewer award in 2012), NAACL (best reviewer award in 2018, 2015), ACL, NIPS, ICLR, IJCAI, EACL, COLING, \*SEM, IJCNLP, ICON

**Journals:** TACL, TPAMI, TALIP

**Recent Workshops:** ACL Workshop of Women in Natural Language Processing (2017), ACL Workshop on Representation Learning for NLP (2017), EACL Workshop on Ethics in Natural Language Processing (2017), NAACL Multilingual and Crosslingual Methods in NLP (2016), NAACL Human-Computer Question Answering



(2016), ACL Evaluating Vector-Space Representations for NLP (2016), NAACL Vector Space Modeling for NLP (2015).

**University Research Proposals:** ORAU

**Organizer:** NLP/ML Colloquium Series at UNC

**Organizer:** Workshop on Language Grounding for Robotics at ACL 2017

**Organizer:** Midwest Speech and Language Days 2015

**Committee Member:** Graduate (PhD) Admissions Committee, CS, UNC Chapel Hill

**Committee Member:** Graduate (PhD) Admissions Committee, EECS, UC Berkeley

**Panel Member:** National Science Foundation (NSF) Review Panels

**Software and Datasets:** Available for various papers on my webpage: <http://ttic.uchicago.edu/~mbansal>

## Recent Invited Talks

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‘Multi-Task and Reinforcement Learning for Entailment-Based Natural Language Generation’, *JHU, Bloomberg, Google, Facebook, UIUC, UWash, Amazon, Triangle ML Day* (May-Mar, 2018)

‘Structured Learning of World Knowledge for Natural Language Semantics’, *CMU, MSR, Rutgers, UC Davis, UC Irvine, UNC Chapel Hill, UT Austin, Virginia Tech* (Feb-Apr, 2016)

‘Neural Attention Models for Natural Language Grounding and Generation’, *IIT-Delhi, IIT-Kanpur* (Sep-Oct, 2015)

‘Improving Neural Embeddings via Paraphrase, Translational, and Syntactic Knowledge’, *Columbia University, Google Research, NYU* (Apr, 2015)

‘Semantic World Knowledge for NLP’, *UToronto, UMichigan, Virginia Tech*, (Nov-Jan, 2015)