Jacob Andreas

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Employment

Massachusetts Institute of Technology
Assistant Professor, beginning 2019.

Microsoft
Senior Researcher, 2018–2019.

Semantic Machines
Research Scientist, 2014–2018.

Education

University of California, Berkeley
Doctor of Philosophy, 2013–2018. Advisor: Dan Klein.

University of Cambridge
Master of Philosophy (with distinction), 2012–2013. Advisor: Stephen Clark.

Columbia University in the City of New York
Bachelor of Science (*summa cum laude*), 2008–2012. Thesis advisor: Michael Collins.

Fellowships, Awards & Honors

Best paper: *Learning to compose neural networks for question answering*, NAACL 2016.
Best paper honorable mention: *Modular multitask reinforcement learning with policy sketches*, ICML 2017.

Facebook Graduate Fellowship, 2016–2018
Huawei–Berkeley Artificial Intelligence Research Fellowship, 2017
National Science Foundation Graduate Fellowship, 2013–2016
Winston Churchill Scholarship, 2012–2013
C. Prescott Davis Scholarship, Columbia, 2008–2012

M.Phil. Dissertation Prize, Computer Laboratory, Cambridge, 2013
Theodore R. Bashkow Prize (for computer science research), Columbia, 2012
Russell C. Mills Prize (for computer science coursework), Columbia, 2012
Tau Beta Pi, 2011

Publications

[30] *Speaker–follower models for vision-and-language navigation*.
Daniel Fried,* Ronghang Hu,* Volkan Cirik,* Anna Rohrbach, Jacob Andreas, Louis-Philippe Morency,
Taylor Berg-Kirkpatrick, Kate Saenko, Trevor Darrell and Dan Klein..
NeurIPS, 2018.

[29] *Explainable neural computation via stack neural module networks*.
Ronghang Hu, Jacob Andreas, Kate Saenko and Trevor Darrell.
ECCV, 2018.

[28] *Can deep reinforcement learning solve Erdős–Selfridge–Spencer games?*
Maithra Raghu, Alex Irpan, Jacob Andreas, Robert Kleinberg, Quoc Le and Jon Kleinberg.
ICML, 2018.

[27] *Learning with latent language*.
Jacob Andreas, Dan Klein and Sergey Levine.
NAACL, 2018.

[26] *Unified pragmatic models for generating and following instructions*.
Daniel Fried, Jacob Andreas and Dan Klein.
NAACL, 2018.

[25] *Learning to reason: End to end module networks for visual question answering*.
Ronghang Hu, Jacob Andreas, Marcus Rohrbach, Trevor Darrell and Kate Saenko.
ICCV, 2017. (Spotlight presentation.)

[24] *Analogs of linguistic structure in deep representations*.
Jacob Andreas and Dan Klein.
EMNLP, 2017.

[23] *Modular multitask reinforcement learning with policy sketches*.
Jacob Andreas, Dan Klein and Sergey Levine.
ICML, 2017. (Best paper honorable mention.)

[22] *Translating neuralese*.
Jacob Andreas, Anca Dragan and Dan Klein.
ACL, 2017.

[21] *A minimal span-based constituency parser*.
Mitchell Stern, Jacob Andreas and Dan Klein.
ACL, 2017.

[20] *Modeling relationships in referential expressions with compositional modular networks*.
Ronghang Hu, Marcus Rohrbach, Jacob Andreas, Trevor Darrell and Kate Saenko.
CVPR, 2017. (Spotlight presentation.)

[19] *Learning to plan without a planner*.
Jacob Andreas, Mitchell Stern and Dan Klein.
NeurIPS—Workshop on Neural Abstract Machines and Program Induction, 2016.

[18] *Reasoning about pragmatics with neural listeners and speakers*.
Jacob Andreas and Dan Klein.
EMNLP, 2016.

[17] *Learning to compose neural networks for question answering.*
Jacob Andreas, Marcus Rohrbach, Trevor Darrell and Dan Klein.
NAACL, 2016. (Best paper.)

[16] *Neural module networks.*
Jacob Andreas, Marcus Rohrbach, Trevor Darrell and Dan Klein.
CVPR, 2016. (Oral presentation.)

[15] *On the accuracy of self-normalized log-linear models.*
Jacob Andreas,* Maxim Rabinovich,* Dan Klein and Michael I. Jordan.
NeurIPS, 2015.

[14] *Alignment-based compositional semantics for instruction following.*
Jacob Andreas and Dan Klein.
EMNLP, 2015.

[13] *When and why are log-linear models self-normalizing?*
Jacob Andreas and Dan Klein.
NAACL, 2015.

[12] *Unsupervised transcription of piano music.*
Taylor Berg-Kirkpatrick, Jacob Andreas and Dan Klein.
NeurIPS, 2014. (Spotlight presentation.)

[11] *Grounding language with points and paths in continuous spaces.*
Jacob Andreas and Dan Klein.
CoNLL, 2014.

[10] *How much do word embeddings encode about syntax?*
Jacob Andreas and Dan Klein.
ACL, 2014.

[9] *A generative model of vector space semantics.*
Jacob Andreas and Zoubin Ghahramani.
ACL—Workshop on Continuous Vector Space Models and their Compositionality, 2013.

[8] *Semantic parsing as machine translation.*
Jacob Andreas, Andreas Vlachos and Stephen Clark.
ACL, 2013.

[7] *Parsing graphs with hyperedge replacement grammars.*
David Chiang, Jacob Andreas, Daniel Bauer, Karl Moritz Hermann, Bevan Jones and Kevin Knight.
ACL, 2013.

[6] *Semantics-based machine translation with hyperedge replacement grammars.*
Bevan Jones,* Jacob Andreas,* Daniel Bauer,* Karl Moritz Hermann,* and Kevin Knight.
COLING, 2012.

[5] *Annotating agreement and disagreement in threaded discussion.*
Jacob Andreas, Sara Rosenthal and Kathleen McKeown.
LREC, 2012.

[4] *Detecting influencers in written online conversations.*
Or Biran, Sara Rosenthal, Jacob Andreas, Kathleen McKeown and Owen Rambow.
NAACL—Workshop on Language and Social Media, 2012.

[3] *Fuzzy syntactic reordering for phrase-based statistical machine translation.*
     Jacob Andreas, Nizar Habash and Owen Rambow.
     WMT, 2011.

[2] *Semi-automated annotation for prepositional phrase attachment.*
     Sara Rosenthal, William Lipovsky, Kathleen McKeown, Kapil Thadani and Jacob Andreas.
     LREC, 2010.

[1] *Corpus creation for new genres: a crowdsourced approach to PP attachment.*
     Mukund Jha, Jacob Andreas, Kapil Thadani, Sara Rosenthal and Kathleen McKeown.
     NAACL—Workshop on Creating Speech and Language Data with Mechanical Turk, 2010.

Teaching

As instructor

Artificial Intelligence (cs188). Berkeley, 2016.
Emerging Scholars Program (COMS 3998). Columbia, 2011.

As teaching assistant

Artificial Intelligence (cs188). Berkeley, 2016.
Computer Science Theory (COMS 3261). Columbia, 2012.

Guest lectures

"Formal semantics" in *Natural Language Processing*, Berkeley, 2017.
"Computational semantics" in *Syntax & Semantics*, Berkeley, 2014–2018.
"Language and behavior" in *Algorithms for Human–Robot Interaction*, Berkeley, 2016.
"Natural language processing" in *Artificial Intelligence*, Berkeley, 2016.
"Language and vision" in *Comptuer Vision*, Berkeley, 2016.
"Recurrent neural networks" in *Applied NLP*, Berkeley, 2015.
"Grounded semantics" in *Natural Language Processing*, Berkeley, 2014.
"Computability, reductions, the halting problem" in *Computer Science Theory*, Columbia, 2012.

Invited Talks & Panels

"Linguistic scaffolds for policy learning"
    NeurIPS Deep RL Workshop, 2018.

"Learning by narrating"
    NYU Text as Data seminar, 2018.

"Language, meaning, belief and behavior"
    DeepMind, CLASP Workshop on Dialogue and Perception, 2018.

"Things to do with your visual dialogue model"
    CVPR Workshop on Visual Question Answering and Visual Dialogue, 2018.

"Learning from language"
    TTI Chicago, McGill, University of Montreal, Columbia, Carnegie Mellon, Georgia Tech, Stanford, MIT, UC Berkeley, University of Pennsylvania, 2018.

"Formal semantics for informal worlds"
    Society for Computation in Linguistics, 2017.

Panelist, NIPS Workshop on Emergent Communication, 2017.

"Translating neuralese"
    University of Amsterdam, AI2 *NLP Highlights* podcast, Facebook, 2016.

"Structure and interpretation of neural codes"
    Stanford, 2016.

"Modular neural architectures for perception and communication"
    MIT, Harvard, Allen Institute for AI, University of Washington, Microsoft Research, TTI Chicago, Google Research, 2016.

"Language understanding as guided planning"
    Berkeley Workshop on Algorithms for Human–Robot Interaction, 2015.

"Unsupervised transcription of piano music"
    Berkeley Center for New Music and Audio Technology, 2015.

Professional Activities & Service

Reviewing: ACL,* NAACL, EMNLP, EACL, NIPS,* ICML, ICLR, UAI, PAMI, SCiL. (*outstanding reviewer)
Organizing Committee, ACL Workshop on Language Grounding for Robotics, 2017.
Organizing Committee, NAACL Student Research Workshop, 2016.
President, Berkeley CS Graduate Student Association, 2014–2015.
Programming coach, 2Train Robotics (FIRST 395), 2010–2012.

Et cetera

UC Berkeley Chamber Chorus, 2014–2017.
Cambridge University Music Society Chorus, 2013.
Churchill College Boat Club, 2012–2013.
Lifetime member & full member, Philolexian Society, 2008–present.
Eagle scout, 2008.

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