Jack Hessel

Research scientist: language models, machine learning, and computer vision

Email: jmhessel@gmail.com
Website: www.jmhessel.com
Publications: Google Scholar

Education

Ph.D., Computer Science
Cornell University
August 2014 - August 2020
Thesis: Learning from Multimodal Web Data

B.A., Computer Science and Math/Statistics
Carleton College
September 2010 - June 2014
Magna Cum Laude + Computer Science Honors

Employment

Founding Researcher, *Samaya AI* — Oct 2023 – present
Building LLM-based knowledge discovery tools at an early-stage startup

Postdoc+Research Scientist, *Allen Institute for Artificial Intelligence* — July 2020 – Oct 2023
Host: Professor Yejin Choi
Working on commonsense reasoning, vision and language, etc.

Ph.D. Student, *Cornell University* — Sep 2014 – June 2020
Advisor: Professor Lillian Lee

Selected publications (full publication list here)

As of November 2024, my h-index is 29. I publish regularly in language processing, machine learning, and computer vision venues (e.g., ACL, EMNLP, NeurIPS, etc.). Included are a selected subset of publications representative of my past+present work.

Wenting Zhao, Xiang Ren, **Jack Hessel**, Claire Cardie, Yejin Choi, Yuntian Deng. "(InThe)WildChat: 570K ChatGPT Interaction Logs In The Wild." ICLR 2024.

Jack Hessel, Ana Marasović, Jena D. Hwang, Lillian Lee, Jeff Da, Rowan Zellers, Robert Mankoff, Yejin Choi. "Do Androids Laugh at Electric Sheep? Humor 'Understanding' Benchmarks from The New Yorker Caption Contest." ACL 2023; ***Best Paper Award, one of 3 / 3872 submissions***

Liunian Harold Li, **Jack Hessel**, Youngjae Yu, Xiang Ren, Kai-Wei Chang and Yejin Choi. "Symbolic Chain-of-Thought Distillation: Small Models Can Also 'Think' Step-by-Step." ACL 2023.

Wanrong Zhu*, **Jack Hessel***, Anas Awadalla, Samir Yitzhak Gadre, Jesse Dodge, Alex Fang, Youngjae Yu, Ludwig Schmidt, William Yang Wang, Yejin Choi. "Multimodal C4: An Open, Billion-scale Corpus of Images Interleaved With Text." NeurIPS Datasets+Benchmarks 2023.

Hyunwoo Kim, **Jack Hessel**, Liwei Jiang, Ximing Lu, Youngjae Yu, Pei Zhou, Ronan Le Bras, Malihe Alikhani, Gunhee Kim, Maarten Sap, Yejin Choi. "SODA: Million-scale Dialogue Distillation with Social Commonsense Contextualization." EMNLP 2023. ***Outstanding Paper Award, one of 30 / 4909 submissions***

Jack Hessel*, Jena D. Hwang*, Jae Sung Park, Rowan Zellers, Chandra Bhagavatula, Anna Rohrbach, Kate Saenko, and Yejin Choi. "The Abduction of Sherlock Holmes: A Dataset for Visual Abductive Reasoning." ECCV 2022 (oral).

Peter West, Chandra Bhagavatula, **Jack Hessel**, Jena D. Hwang, Liwei Jiang, Ronan Le Bras, Ximing Lu, Sean Welleck, and Yejin Choi. "Symbolic Knowledge Distillation: from General Language Models to Commonsense Models." NAACL 2022.

Rowan Zellers*, Ximing Lu*, **Jack Hessel***, Youngjae Yu, Jae Sung Park, Jize Cao, Ali Farhadi, and Yejin Choi. "MERLOT: Multimodal Neural Script Knowledge Models." NeurIPS 2021 (Oral; top 1% of submissions).

Jack Hessel, Ari Holtzman, Maxwell Forbes, Ronan Le Bras, and Yejin Choi. "CLIPScore: A Reference-free Evaluation Metric for Image Captioning." EMNLP 2021.

Jack Hessel and Lillian Lee. "Does my multimodal model learn cross-modal interactions? It's harder to tell than you might think!" EMNLP 2020.

Jack Hessel, Lillian Lee, and David Mimno. "Unsupervised Discovery of Multimodal Links in Multi-image, Multi-sentence Documents." EMNLP 2019.

Jack Hessel, David Mimno, and Lillian Lee. "Quantifying the Visual Concreteness of Words and Topics in Multimodal Datasets." NAACL 2018.

Honors + Invited Talks

Honors

ACL Best Theme Paper Award 2024

ACL Best Paper Award 2023

EMNLP Outstanding Paper Award 2023

Top Reviewer Recognition Various
ACL 2018+2020+2021, NAACL 2019, EMNLP 2018+2019, CoNLL 2019, ICML 2020

MICS Conference Best Paper Award 2014

Phi Beta Kappa, Beta of Minnesota 2014

Sigma Xi Inductee 2014

Invited Talks

Vision in the Wild @ CVPR: "Visual Details Don't Matter (Until They Do)." 2024
Carnegie Mellon University: "Hurdles for vision+language models." 2023
Cornell University: "Hurdles for vision+language models." 2023
NICE CVPR Workshop: "Recognition isn't enough for image captioning." 2023
Guest lecture for Caltech CS148 w/ Yejin Choi "Common Sense: The Dark Matter of Language Intelligence" 2023
The AI Talks (NUS/NTU Singapore): "The Case for Reasoning Beyond Recognition" 2023
Procter & Gamble: "The Case for Reasoning Beyond Recognition" 2022
Seoul National University: "The Case for Reasoning Beyond Recognition" 2022
Adobe Research: "The Case for Reasoning Beyond Recognition" 2022
University of Washington: Two Lectures (Linguistics, Honors Col.) "New Frontiers in Multimodal Grounding" 2022
University of Pittsburgh: "(at least) Two Conceptions of Visual-Textual Grounding" 2020
Allen Institute for AI: "The Promise and Perils of Learning Grounding from Visual-Textual Web Data." 2020
UNC Chapel Hill: "The Promise and Perils of Learning Grounding from Visual-Textual Web Data." 2020
Rutgers University: "Multimodal Grounding from User-generated Web Content." 2019
SRI International: "Multimodal Grounding from User-generated Web Content." 2019
Cornell University: PhD Colloquium, "Unsupervised Learning From Multimodal Documents." 2019
University of Pittsburgh: "Grounding Images from a Digital Library in their Textual Contexts." 2018
Cornell University: Two Guest Lectures for CS4300, "Practical Unsupervised Learning" 2015
Carleton College: "The Role of Altruism on Kickstarter" 2014

Other Employment and Academic Service

Teaching+Internships

Research Intern, *Google Research* Summer 2019, Summer 2018
Hosts: Bo Pang and Zhenhai Zhu.
Worked with the natural language understanding team on video language joint learning: this work was published at *CoNLL 2019* and *EMNLP 2020*.

Invited Visiting Instructor, *Computer Science Dept., Carleton College* Spring 2019
Lead instructor of i) Natural Language Processing and ii) Discrete Math; 30+ students in each class

Research Intern, *Facebook, Inc.* Summer 2017
Host: Amit Bahl.
Worked with the Core Data Science team on personalized language modeling, and cross-modal retrieval.

Research Intern, *Twitter, Inc.* Summer 2016
Host: Clément Farabet.
Worked with the Cortex Team as their first intern on large-scale/multimodal node embeddings in graphs, language modeling, and engagement prediction.

Research Intern, *Washington University, St. Louis REU* Summer 2013
Host: Kilian Weinberger.
Contributed to a GPU support vector machine package that accompanies Tyree et al.'s "Parallel Support Vector Machines in Practice." 2014.

Teaching Assistant, *Cornell University* Various
Language and Information, 2016; Machine Learning for Data Science, 2015; Intro to Computer Graphics, 2014

Program Committees/Reviewing/(Senior)Area Chairing

Since 2015, I have regularly reviewed, (senior) area chaired, ++ for major NLP/CV/ML conferences+journals like ACL, EMNLP, NeurIPS, etc.

Development Experience

Open Source Contributions

I regularly open source datasets and code to accompany my academic publications. In addition, I occasionally do fun, standalone open source work like:

Developed a TreeLSTM in `TensorFlow2`: this neural network dynamically changes its topology on a per-example basis (https://github.com/jmhessel/recursive_nn_tf2)

Developed `fmpytorch` (150+ stars on GitHub): a cythonized implementation of second order factorization machines in `pytorch`, forward/backward passes implemented in `C` (https://github.com/jmhessel/fmpytorch)

Developed `fightingwords` for comparing word usage rate differences between corpora; used in several refereed publications (https://github.com/jmhessel/FightingWords)

Pull requests merged to *Keras*, and *Gensim*, and *tensorflow*

Technical Skills

Machine Learning Skills: Various machine learning/statistical toolkits/languages (e.g. sklearn, Tensorflow, PyTorch, R, etc.). Experience working with large, multi-faceted datasets.

Development Skills: Object-oriented programming (Python, Java, C++), parallel programming experience on CPUs + GPUs + TPUs, experience with various languages, development environments, version control systems, operating systems.

References

Available upon request