

Saadia K. Gabriel

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Education:

University of Washington

Fall 2017 – Current

PhD in Computer Science & Engineering, advised by Prof. Yejin Choi

Mount Holyoke College, Summa Cum Laude

May 2017

BA in Computer Science & Mathematics

Thesis Adviser: Prof. Dan Sheldon

Honors and Achievements:

- MSR Ada Lovelace Fellowship Nomination (Fall 2018)
- CRA-W Grad Cohort Workshop Participant (Spring 2018)
- CRA URMD Grad Cohort Workshop Participant (Spring 2018)
- Phi Beta Kappa (May 2017)
- Weaver Award for Computer Science and Math (May 2017)
- David Notkin Endowed Graduate Fellowship in Computer Science & Engineering (March 2017)
- ARCS Foundation Fellowship (March 2017)
- Class of 1937 Prize in Math for outstanding achievement as a junior (May 2016)
- Sarah Williston Prize for top 5 students in class of 2017 (November 2015)
- Mildred L. Sanderson Prize for excellence in Mathematics (Spring 2014)

Publications and Presentations:

- Co-opNet: Cooperative Generator-Discriminator Networks for Abstractive Summarization with Narrative Flow
Saadia Gabriel; Antoine Bosselut; Ari Holtzman; Kyle Lo; Asli Celikyilmaz; Yejin Choi
arXiv preprint 2019
- Social Bias Frames: Reasoning about Social and Power Implications of Language
Maarten Sap; **Saadia Gabriel**; Lianhui Qin; Dan Jurafsky; Noah A. Smith; Yejin Choi
arXiv preprint 2019
- Detecting and Tracking Communal Bird Roosts in Weather Radar Data
Zezhou Cheng; **Saadia Gabriel**; Pankaj Bhambhani; Daniel Sheldon; Subhransu Maji; Andrew Laughlin; David Winkler
AAAI 2020 (Social Impact Track)
- The Risk of Racial Bias in Hate Speech Detection
Maarten Sap; Dallas Card; **Saadia Gabriel**; Yejin Choi; Noah A. Smith
ACL 2019 – Best Short Paper Nominee
- MathQA: Towards Interpretable Math Word Problem Solving with Operation-Based Formalisms
Aida Amini; **Saadia Gabriel**; Shanchuan Lin; Rik Koncel-Kedziorski; Yejin Choi; Hannaneh Hajishirzi
NAACL 2019
- Early Fusion for Goal Directed Robotic Vision
Aaron Walsman; Yonatan Bisk; **Saadia Gabriel**; Dipendra Misra; Yoav Artzi; Yejin Choi; Dieter Fox
IROS 2019 – Best Paper Nominee
- Ruling the Roost with CNNs: Detecting and Tracking Communal Bird Roosts in Weather Radar Data
Zezhou Cheng; **Saadia Gabriel**; Pankaj Bhambhani; Daniel Sheldon; Subhransu Maji; Andrew Laughlin; David Winkler
Fine-Grained Visual Categorization Workshop (FGVC5) at CVPR 2018

- Modeling Swallow Roosts Using Weather Radar
Undergraduate thesis advised by Prof. Daniel Sheldon

Current Research Projects:

Neural Detox

Collaborators: Maarten Sap (UW), Lianhui Qin (UW), Prof. Noah Smith (UW), Prof. Dan Jurafsky (Stanford)

In this project, we present an adversarial crowdsourcing framework for dynamically training models to classify toxic language in social media. The framework trains models dynamically through the use of adversarial crowdsourcing. We reason about biases and implied stereotypes in social media posts through the use of structured annotations that consider audience vs. poster perspectives and targeted demographics.

Scientific Paper Summarization

Collaborators: Antoine Bosselut (UW), Ari Holtzman (UW), Asli Celikyilmaz (MSR)

In this work, we explore new Transformer architectures for large-scale abstractive summarization of scientific papers that incorporate an inherent notion of coherent narrative flow. Additionally, we present a new dataset for natural language generation tasks extracted from arXiv. We show how the dataset challenges state-of-the-art summarization models, including pointer-generator networks and reinforcement learning-based models.

Math Word Problem Solving

Collaborators: Aida Amini (UW), Rik Koncel-Kedziorski (UW), Prof. Hannaneh Hajishirzi (UW)

We develop a neural network architecture to solve complex math word problems through generation of natural language explanations. The neural network predicts which chain of actions lead to a word problem's final solution by leveraging word knowledge to predict sequences of operators. We also introduce a new dataset (MathQA) and representation language that aligns word problems with action sequences to test the performance of neural networks at logical reasoning.

Experience:

Computer Vision & Learning Intern, SRI International (Summer 2019)

- Working with Ajay Divakaran and Karan Sikka on using pre-trained models for commonsense knowledge extraction and integrating commonsense knowledge into multimodal applications of NLP

Graduate Research Assistant, University of Washington (Fall 2017 – Current)

- Researching machine learning techniques and implementing deep-learning models for natural language understanding, social commonsense and logical reasoning in text
- Investigating ways of representing effects of actions in stories dependent on logical reasoning, like math word problems

Data Science Research Assistant, University of Massachusetts Amherst (Summer 2016)

- Developed computer vision models to identify bird roosts in radar data
- Worked with SQL and JavaScript to display results of roost detection in web application
- Participated in UMass College of Information and Computer Sciences poster presentation

GEM CS Mentor (Google-Funded Program), Mount Holyoke College (Spring 2016)

- Developed an active learning plan for Intro to Object-Oriented Programming class
- Mentored students and gave feedback in CS 101 lab
- Reviewed students' code and gave feedback on assignments

REU Research Assistant, University of Massachusetts Amherst (Summer 2015)

- Analyzed large datasets using Python and Matlab
- Developed parametric model to identify birds in radar data
- Presented research to technical and non-technical audiences

Wearable Electronics Inventor (2013 – Current)

- Created a jacket called The Turtle that charges mobile devices
- Gave a presentation on The Turtle and wearable technology for Computer Science Week at Mount Holyoke in Fall 2013

CS Educator (2012 – Current)

- Developed interactive movie application for teaching intro computer science and discrete mathematics to beginning students using hand-drawn animation

Teaching:

- TA for Real Analysis (Math 301), Mount Holyoke College

Service:

- Secondary Reviewer for ICLR
- Secondary Reviewer for EMNLP
- PC for ACL 2019 SRW
- PC for NAACL 2019 SRW, NeuralGen and WNU workshops
- UW NLP Retreat Organizer (2018, 2019)
- Mount Holyoke College CS Department Chair Student Search Committee (2016 - 2017)

Selected Talks:

- Mount Holyoke Computer Science Week
The Turtle: A Solar-powered Jacket for Charging Mobile Devices – December 2013
- Mount Holyoke Senior Symposium
Modeling Swallow Roosts Using Weather Radar – April 2017
- Undergrad Thesis Defense
Modeling Swallow Roosts Using Weather Radar – May 2017
- MSR 2018 PhD Summit Poster Session
Neural Detox – October 2018
- MSR 2019 PhD Summit Poster Session
Universal Frameworks for Commonsense Knowledge Integration – October 2019
- UW Quals Talk
Co-opNet: Cooperative Generator-Discriminator Networks – October 2019
- Invited Talk at Carlson School of Management
NLP State-of-the-Art Methods – November 2019
- Invited Talk at Mount Holyoke College
MathQA to Co-opNet: Can We Teach NLP Models to Reason? – November 2019

Skills:

Programming: Python, Java, Matlab, R, ActionScript, HTML, C, JavaScript, SQL

Language: English (Native Speaker), French (Intermediate), Russian (Beginner)