

# ABIGAIL SEE

Personal Webpage: [cs.stanford.edu/people/abisee](http://cs.stanford.edu/people/abisee)

Research Blog: [abigailsee.com](http://abigailsee.com)

## EDUCATION

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### Stanford University

September 2015 — Present

PhD in Computer Science. Advisor: Professor Christopher Manning.

*Research interests:* Deep Learning for Natural Language Processing. In particular, controllable and interpretable techniques for open-ended Natural Language Generation tasks.

*Classes:* CS224N (Natural Language Processing), CS231N (Convolutional Neural Nets for Visual Recognition), CS228 (Probabilistic Graphical Models), CS246 (Mining Massive Datasets), CME 151A (Interactive Data Visualization in D3), STATS385 (Theories of Deep Learning).

### University of Cambridge, Queens' College, UK

2010 — 2014

*Master of Mathematics (MMath):* Pass with Distinction. Essay subject: 'Smoothed Analysis with Applications in Machine Learning'.

*BA in Mathematics:* Upper Second Class honours in second and third years; First Class in first year.

*Interests:* Pure Mathematics, particularly Combinatorics, Optimization and Operational Research.

### Hills Road Sixth Form College, Cambridge, UK

2008 — 2010

A levels: Mathematics, Further Mathematics, Physics, English Literature, all A\*.

AS levels: Music and Computing, both A.

### Perse School for Girls, Cambridge, UK

1999 — 2008

10 GCSEs, all A\*.

## RESEARCH PROJECTS

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### Controllable Text Generation

Summer 2018 – Present

*Abigail See, Jason Weston, Douwe Kiela*

*Facebook AI Research, New York*

- Developed simple but effective method to control multiple aspects of generated text in a sequence-to-sequence model. Our method provides a unified solution to control any measurable attribute.
- Applied to a chat-dialogue setting and showed that by controlling certain important attributes, we can create a chatbot that is more engaging for humans.
- Will submit to [NAACL 2019].

### Text Summarization

Summer 2016 — 2017

*Abigail See, Peter Liu, Christopher Manning*

*Google Brain and Stanford University*

- Developed deep learning models with TensorFlow to perform text summarization on long documents.
- Designed an interactive tool to visualize neural models with attention.
- Proposed an architecture that improves the reliability of sequence-to-sequence models [ACL 2017].

### Compression of Neural Machine Translation

Autumn 2015 — Spring 2016

*Abigail See, Minh-Thang Luong, Christopher Manning*

*Stanford University*

- Investigated the effectiveness of pruning a state-of-the-art Neural Machine Translation system.
- Explored several magnitude-based pruning methods, as a means of both compression and regularization.
- Proposed an extremely simple but effective pruning-and-retraining scheme that achieves 5× reduction in size without performance loss [CoNLL 2016].

## Compatibility Weighted Voting Games

Abigail See, Yoram Bachrach, Pushmeet Kohli

Summer 2013

Microsoft Research Cambridge, UK

- Investigated the role of compatibility in Weighted Voting Games (a classic game theory voting system).
- Provided both complexity proofs and empirical results via simulations [AAMAS 2014].

## Terminator Project

Abigail See, Byron Cook

Summer 2012

Microsoft Research Cambridge, UK

- Terminator is a program analysis tool that aims to prove program termination using automatic methods.
- Successfully implemented a new, more flexible proof strategy based on *lexicographic ranking functions*, resulting in faster and more comprehensive proofs [TACAS 2013].

## TEACHING AND LEADERSHIP EXPERIENCE

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- **Head TA and lecturer, CS224N** (Natural Language Processing with Deep Learning), Winter 2018. Worked with Adjunct Professor Richard Socher to design syllabus, delivered two original lectures, managed team of 18 TAs and over 400 students, and developed open-source code for student projects. Won a TA Award for contributions to this course.
- Organizer and moderator of **AI Salon**, a regular discussion event in the Stanford AI Lab, 2017-2018. Discussions center on high-level issues in AI, and frequently feature prominent expert guests. Moderated a debate between Christopher Manning and Yann LeCun, which can be found on YouTube.
- Organizer of **AI Women**, a community inclusivity group in the Stanford AI Lab, 2017-2018. The group brings together women and other interested people in the lab for networking and discussion.
- Research mentor at **SAILORS 2017**, Stanford AI Lab's outreach program for high school girls. Over two weeks, instructed and inspired students to build a NLP-for-social-good system.
- Lead mentor, **Girls Teaching Girls To Code 2016 and 2017**. Designed a simple movie recommender system to interactively teach AI concepts to high school girls at the annual code camp.
- Maths tutor for underprivileged high school girls, **Action Tutoring London**, Spring 2015.

## PUBLICATIONS

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- Abigail See, Peter J. Liu and Christopher D. Manning. **Get To The Point: Summarization with Pointer-Generator Networks**, *Association of Computational Linguistics (ACL)*, 2017.
  - Oral presentation, ACL 2017, Vancouver, Canada, 1st August 2017.
- Abigail See, Minh-Thang Luong and Christopher D. Manning. **Compression of Neural Machine Translation Models via Pruning**, *Computational Natural Language Learning (CoNLL)*, 2016.
  - Poster presentation, CoNLL 2016, Berlin, Germany, 12th August 2016.
- Abigail See, Yoram Bachrach and Pushmeet Kohli. **The Cost of Principles: Analyzing power in Compatibility Weighted Voting Games**, *Autonomous Agents and Multi-Agent Systems (AAMAS)*, 2014.
- Byron Cook, Abigail See and Florian Zuleger. **Ramsey vs. Lexicographic Termination Proving**, *Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, 2013.
  - Oral presentation, TACAS 2013, Rome, Italy, 18th March 2013.

## AWARDS

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- Gerald J. Lieberman Fellowship, 2018. The fellowship is awarded to students whose research accomplishments, teaching, and service to the University have demonstrated their potential for becoming academic leaders.
- Centennial TA Award, 2018. The award recognizes outstanding teaching assistants for their tremendous service and dedication in providing excellent classroom instruction for Stanford students.
- NVIDIA Graduate Fellowship, 2017. The fellowship is awarded to PhD students who are researching topics that will lead to major advances in the graphics and high-performance computing industries.
- Queens' College Cambridge: College Exhibition and College Prize, 2011.
- National Cipher Challenge: Captained a team of five in the highly competitive cryptanalysis challenge. First place in 2007, fourth place in 2008 and 2009.
- UKMT Mathematics Challenges. 2004–2009: Gold certificates. 2008: Gold medal and Intermediate Olympiad Distinction; selected for National Mathematics Summer School (top 40 nationwide attend).

## SERVICE

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Association of Computational Linguistics (**ACL**) **2017, 2018**. (Primary reviewer).  
Computational Natural Language Learning (**CoNLL**) **2018**. (Primary reviewer).  
Workshop on Neural Machine Translation (**WNMT**) **2017, 2018**. (Primary reviewer).  
Workshop on NLP Open Source Software (**NLP-OSS**) **2018**. (Primary reviewer, Program committee).  
European Conference on Computer Vision (**ECCV**) **2016**. (Secondary reviewer).  
Computer Aided Verification (**CAV**) **2015**. (Secondary reviewer).

## SKILLS

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| <b>Software</b>  | Python, Tensorflow, Pytorch, MATLAB, F# (extensive).<br>Javascript, D3, Java, Haskell (basic). |
| <b>Languages</b> | English (native), French (basic).  |