Chris Tanner

Harvard University
Institute for Applied Computational Science
Allston, MA, USA
✉ christanner@g.harvard.edu
🖰 chriswtanner.com

Research Interests

My research is within natural language processing and machine learning, with a focus on discourse, entity linking, structured document representation, and large-scale data annotation.

Education

2019	**Ph.D. Computer Science**, Brown University	
Adviser	Eugene Charniak	
Ph.D. Thesis	Cross-Document Coreference Resolution for Entities and Events	
Committee	Ellie Pavlick, Michael Littman, and Stephanie Tellex	
2009	**M.S. Computer Science**, UCLA	
Adviser	Michael Dyer	
M.S. Thesis	An Exploration of Animats-Based Evolution and Communication	
2006	**B.S. Computer Science**, Florida Institute of Technology	
	B.S. Applied Mathematics, Florida Institute of Technology	

Staff Appointments

Fall 2022 –   **MIT**, *Lecturer (part-time)*.
Co-teach one Machine Learning course every semester.

2022 – present   **Kensho Technologies**, *Head of R&D*.
Lead research and development at the 100-person machine learning-based firm, which is owned by S&P Global. Products mostly concern NLP (e.g., ASR, Entity Disambituation, Information Extraction)

2019 – present   **Harvard University**, *Lecturer (full-time)*.
Teach graduate courses in natural language processing, deep learning, and data science. Advise Master's thesis research and undergraduates. The Capstone Research course involves directing 40-students on team-based, real-world projects for industry organizations.

2021 – present   **Faculty Affiliate of the Harvard Data Science Initiative**

2009 – 2012   **MIT Lincoln Laboratory**, *Associate Staff Researcher*.
Within the Human Language Technology group, my research included machine translation, named entity recognition, topic modelling, entity disambiguation, face recognition, and streaming algorithms.

Internships

2017   **Spotify**, *Research Intern*.
Project: Natural language understanding / slot-filling and intent classification

2015	**IBM Research**, *Research Intern*.
	Project: Question-answering and learning-to-rank for Watson
2013	**Johns Hopkins University's HLTCOE**, *Research Intern*.
	Project: Automatic query generation and document linking
	Mentors: Mark Dredze and Ben van Durme
2008	**MIT Lincoln Laboratory**, *Research Intern*.
	Project: highly-efficient pattern matching and artificial computer-user simulation
Summer 2007	**Google**, *Software Engineer*.
	Project: automated software testing for Google Picasa (became Google Photos)
Spring 2007	**National Security Agency (NSA)**, *Mathematics Intern*.
	Project: error-correcting codes (abstract algebra and dynamics)
2006	**National Security Agency (NSA)**, *Research Intern*.
	Project: active learning for speech recognition
2004 – 2006	**Florida Institute of Technology**, *Undergraduate Researcher*.
	Project: hierarchical user-based models for personalized information retrieval
2004 – 2005	**Florida Institute of Technology + NASA**, *Undergraduate Researcher*.
	Project: anomaly detection for space shuttle valves

Publications

ICASSP	Thomas Fouts, Ali Hindy, and **Chris Tanner**. *Sensors to Sign Language: A Natural Approach to Equitable Communication. May 2022.*
Brown University	**Chris Tanner** *Toward Featureless Event Coreference Resolution via Conjoined Convolutional Neural Networks. In Brown University Computer Science Dissertations. 2019.*
NAACL	**Chris Tanner** and Eugene Charniak. *A Hybrid Generative/Discriminative Approach to Citation Prediction* An Investigation of Hierarchical Query Sequence Structure.In Proceedings of the Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), pages 75–83, 2015
NIST	**Chris Tanner**, Stephen Chen, Byron Wallace, and Eugene Charniak. *Discriminative Approaches to Citation Evidence Linking and Discourse Prediction* Text Analysis Conference (TAC) Workshop (NIST). 2014
UCLA	**Chris Tanner** *An Exploration of Animats-Based Evolution and Communication. In University of California at Los Angeles Computer Science Master's Thesis. 2009.*

In Progress

In Submission	Xiaohan Yang, Eduardo Peynetti, Vasco Meerman, **Chris Tanner**. *What GPT Knows About Who is Who*. 2022.
In Submission	Ian Kelk, Benjamin Basseri, Wee Yi Lee, Richard Qiu, *Chris Tanner. Automatic Fake News Detection: Are current models "fact checking" or "gut checking"?*. 2022.
In Submission	Alessandro Stolfo, **Chris Tanner**, Vikram Gupta and Mrinmaya Sachan. *An Unsupervised Model for Coreference using Contextualized Representations and Distant Supervision from Linguistic Rules*. 2022.
Submitting in April 2022	Benjamin Levy, Zihao Xu, Ross Karl Kremling, Ross Altman, and **Chris Tanner**. *FLORABERT: cross-species transfer learning with attention-based neural networks for gene expression prediction*. Nature Scientific Reports 2022.
In Preparation	Shivas Jayaram, Eduardo Peynetti, Joe Brucker, Vasco Meerman, and **Chris Tanner**. *HUMBLE NLP: A Cross-Document Annotation Suite for Entities and Events*. 2022.

Talks

This list does not include conference talks, guest lectures, or job-interview talks.

1. *Advice for the Teaching-Track Faculty Job Market.* Alum Panel. Brown University. September 2021.
2. *Deep Learning with Attention.* AI Speaker Series. Keystone Strategy. May 2021.
3. *Hard NLP Tasks: Determining who is who and what is what.* Applied Computation Seminar Series. Harvard University. April 2021.
4. *Language Models and Beyond.* ComputeFest 2021. Harvard University. January 22, 2021.
5. *Cross-document Event Coreference Resolution.* Computer Science Seminar. Florida Institute of Technology. November 20, 2020.
6. *Challenges in Natural Language Processing.* Open Data Science Conference (ODSC). May 19, 2020.
7. *Sequential Data* ComputeFest 2020. Harvard University. January 23, 2020.
8. *Research and Development Meets IT* RDMeetsIT Panel, by Mercedes Benz. MIT Media Lab. October 27, 2019.
9. *The Job Market* PhD Alumni Panel. Brown University. September 27, 2019.

Teaching

Harvard University

Spring 2022	Applied Computational Science Research Capstone (Graduate).
	Details: Designed projects with industry partners; led **five** teams of Master's students toward solutions
	Role: Instructor. Enrollment: 21
Fall 2021	Deep Learning for Natural Language Processing (Graduate).
	Topics: LSTMs, Transformers, Machine Translation, Coreference Resolution, etc
	Role: Instructor. Enrollment: 58
Fall 2021	Applied Computational Science Research Capstone (Graduate).

Details: Designed projects with industry partners; led **six** teams of Master's students toward solutions

Role: Instructor.   Enrollment: 24

Spring 2021   Advanced Data Science (Graduate and Undergraduate).
Topics: CNNs, LSTMs, VAEs, Transformers, GANs, Reinforcement Learning
Role: Co-instructor.   Enrollment: 240

Spring 2021   Applied Computational Science Research Capstone (Graduate).
Details: Designed projects with industry partners; led **four** teams of Master's students toward solutions
Role: Instructor.   Enrollment: 16

Fall 2020   Introduction to Data Science (Graduate and Undergraduate).
Topics: Regression, Inference, EDA, Visualization, Trees, Boosting, Neural Networks
Role: Co-instructor.   Enrollment: 380

Fall 2020   Applied Computational Science Research Capstone (Graduate).
Details: Designed projects with industry partners; led **ten** teams of Master's students toward solutions
Role: Instructor.   Enrollment: 40

Spring 2020   Advanced Data Science (Graduate and Undergraduate).
Topics: CNNs, LSTMs, VAEs, Transformers, GANs, Reinforcement Learning
Role: Co-instructor.   Enrollment: 230

Spring 2020   Data Science Research Capstone (Graduate).
Details: Designed projects with industry partners; led **two** teams of Master's students toward solutions
Role: Instructor.   Enrollment: 8

Fall 2019   Introduction to Data Science (Graduate and Undergraduate).
Topics: Regression, Inference, EDA, Visualization, Trees, Boosting, Neural Networks
Role: Co-instructor.   Enrollment: 370

Fall 2019   Applied Computational Science Research Capstone (Graduate).
Details: Designed projects with industry partners; led **three** teams of Master's students toward solutions
Role: Co-instructor.   Enrollment: 32

Brown University

Fall 2018   Introduction to Computation for Humanities and Social Sciences (Undergraduate).
Topics: data types, functions, data structures, text analysis, APIs, visualizations
Role: Instructor.   Enrollment: 27

Fall 2014	Introduction to Computational Linguistics (Undergraduate).
	Topics: Tagging, Parsing, Machine Translation, Topic Modelling
	Role: Teaching Assistant. Enrollment: 45

UCLA

| Spring 2007 | Assembly Language (Undergraduate). |
| | Role: Teaching Assistant.   Enrollment: 60 |

| Winter 2007 | Artificial Intelligence (Graduate and Undergraduate). |
| | Role: Teaching Assistant.   Enrollment: 40 |

Florida Institute of Technology

| Fall 2006 | Data Structures and Algorithms (Undergraduate). |
| | Role: Teaching Assistant.   Enrollment: 45 |

Advising & Thesis Committees

Harvard University – Master's Thesis

2021 - 2022	Anita Mahinpei. *Automated Data Visualization Captioning.*
2021 - 2022	Xiaohan Yang. *Active Learning for Coreference Resolution.*
2021 - 2022	Xin Zeng. *Joint Coreference Resolution for Entities and Events.*
2021 - 2022	Jack Scudder. *Commonsense-driven Adversarial Attacks in NLP.*
2020 - 2021	Mingyue Wei. *End-to-end Entity Linking with Coherence.*

ETH Zurich – Master's Thesis (co-advised)

| 2021 | Yoel Zweig. *Automatic Grammar Correction.* |
| 2020 - 2021 | Alessandro Stolfo. *Coreference Resolution with Distant Supervision.* |

Harvard University – Independent Study   Spring 2022   Sherry Xie. *Efficient Model Expansion for Small Cor*

Summer 2021	Sun Jie. *Inducting Commonsense into Coreference Resolution.*
Summer 2021	Xavier Evans. *Inducting Commonsense into Coreference Resolution.*
Spring 2021	Ning Hua (visiting from Smith College). *Joint Coreference Resolution for Entities and Events.*
Spring 2020	Brendan Falk. *Extracting People-Organisation Relations from Documents for more Accurate Person Entity Disambiguation*

Brown University – Undergraduates (mentoring)

| 2017 – 2018 | Zhenhao (Andrew) Hou. *Cross-document Event Coreference Resolution* |
| 2015 – 2017 | Qiheng (Sergio) Chen. *Cross-document Event Coreference Resolution* |

High school

2020 – 2021	Ali Hindy and Thomas Fouts. *Automated American Sign Language Translation from hand-built sensors.*

Service

March 2022	Reviewer of Harvard Data Science Initiative's Undergraduate Summer Research applications
January 2022	Reviewer of 200 Harvard Graduate Student applications
2021 – 2022	Faculty Adviser of the Harvard Undergraduate Data Analytics Group
2020 – 2022	Co-coach of *Harvard's ICPC Programming Team*
January 2021	Reviewer of 200 Harvard Graduate Student applications
January 2020	Reviewer of 200 Harvard Graduate Student applications
2017 –	Reviewer for ACL, NAACL, EMNLP

Additional Training

2018	Brown University, Sheridan Teaching Seminar - Reflective Teaching (Certificate I)

Recent Awards

2020-2021	Co-coach of Harvard's ICPC Programming Team, which placed 3rd in North America and 16th in the world
Spring 2021	Harvard Certificate of Teaching Excellence
Fall 2020	Harvard Certificate of Teaching Excellence
Fall 2019	Harvard Certificate of Teaching Excellence
2018	ACL Top Reviewer

Software Fluency

Primary	Python (2015 –), JAVA (2002 – 2015)
Frameworks	PyTorch, TensorFlow, Keras, Theano (2015)
Past	C++, C, Objective-C (iOS development), IBM Info Sphere, Haskell, LISP, Ada, *Basic, Eggplant, FORTRAN, Ruby, Perl, MATLAB, Mathematica, Maple, R