

# ELISA FERRACANE

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## RESEARCH INTERESTS

I am a 4th year graduate student in the field of Computational Linguistics, with a focus on computational discourse. I am interested in understanding discourse from two perspectives: theories that explicitly dictate the discourse structure by making use of extensively annotated data; and models that learn an induced structure without labeled data but trained on an end task. While models that induce structures have recently gained more attention and sometimes outperform those using traditional discourse parsers, it is not clear what these structures represent and whether they share any traits with discourse theories.

## EDUCATION

- PhD in Linguistics, specialization in Computational Linguistics** 2020 (expected)  
The University of Texas at Austin, Texas. GPA: 3.95.  
Advisor: Prof. Katrin Erk
- Master's in Linguistics** May 2018  
Thesis: Testing the usefulness of RST and more general representations for discourse analysis across domains and applications  
Advisors: Katrin Erk, Junyi Jessy Li  
The University of Texas at Austin, Texas. GPA: 3.95.
- Bachelor of Science in Computer Engineering** 2001  
University of Puerto Rico, Mayagüez, Puerto Rico. GPA: 3.80.
- Study abroad** Summer 1998  
Università per Stranieri, Perugia, Italy. GPA: 4.00.

## RESEARCH EXPERIENCE

- Deep Learning Research Intern** Summer 2018  
*Salesforce Research; Palo Alto, California*  
Explored different forms of attention, loss functions, and supervision to induce discourse structure.
- Analysis of induced discourse structures across NLP tasks** 2017-present  
*Supervisors: Katrin Erk, Junyi Jessy Li, Greg Durrett; The University of Texas at Austin*  
Use neural network with attention to induce discourse dependency trees on a combination of end tasks evaluated on the same dataset.  
Analyze dependency trees for usefulness on end task, and comparison between tasks.
- Analysis of spelling mistakes for Parkinson's** 2014-present  
*Supervisor: Colin Bannard; University of Liverpool*  
Analyzing spelling mistakes from healthy and Parkinson's patients with goal of detecting early onset of Parkinson's disease.  
Led annotation project to create corpus of categorized spelling mistakes from Wikipedia, directing three undergraduate students.
- Discourse analysis of medical documents** 2015-2016  
*Supervisors: Byron Wallace, Katrin Erk; The University of Texas at Austin*  
Combined information extraction techniques with coreference chains to identify key pieces of information in medical abstracts.
- Foreign accent adaptation in noise** 2013-2016  
*Supervisor: Rajka Smiljanic; The University of Texas at Austin*  
Carried out experimental phonetics study to analyze listener adaptation to foreign-accented speech in different forms of noise.  
Trained and led several undergraduate researchers on lab protocols and analysis techniques.
- Undergraduate Researcher, NASA Summer Institute in Eng. & Computer Applications** 2001  
*Supervisor: Dillard Menchan; NASA Goddard Space Flight Center*  
Programmatically interfaced with hardware to analyze GPS satellite data.

## RELEVANT GRADUATE COURSEWORK

*Department of Linguistics:* Research in Computational Linguistics

*Department of Computer Science:* Deep Learning Seminar; Structured Models for NLP; Natural Language Processing

*Department of Statistics and Data Science:* Introduction to Statistical Learning; Statistical Modeling

## AWARDS AND FELLOWSHIPS

National Science Foundation Graduate Research Fellowship (NSF GRFP)	2017-2020
Graduate School Mentoring Fellowship; The University of Texas at Austin	2015-2016
Values Award - Trust and personal responsibility in all relationships; IBM	2015
Bravo Award - Exceptional performance on WebSphere Application Server v6.1; IBM	2005
Bravo Award - Product Validation contributions for WebSphere z/OS V5.0, 5.0.1, 5.0.2; IBM	2004

## SKILLS

<b>Languages</b>	English, Spanish, Italian (fluent); French, Japanese, Chinese (limited)
<b>Programming Languages</b>	Python, Java, R; knowledge of Jython, shell script, SQL, javascript, HTML, C/C++
<b>Operating Systems</b>	UNIX, Linux, macOS, z/OS, Windows
<b>Software</b>	TensorFlow, PyTorch, DyNet, scikit-learn, numpy, NLTK, pandas, Jupyter Notebook, R Studio, E-Prime, Eclipse, Rational Tools, IBM WebSphere Application Server, HTTPUnit, Junit
<b>Communication</b>	Excellent written and oral communication skills across large organizations, different cultures and languages
<b>Leadership</b>	Extensive experience leading and organizing small teams in successful product deliveries

## WORK EXPERIENCE

<b>Security Software Developer for WebSphere Application Server</b>	2006-2015
<i>IBM; Austin, Texas</i> Technical lead. Customer advocate for global financial firm. Technical mentor for 2 IBM new hires and 2 new team members.	
<b>Member of Corporate Services Corp in Kenya</b>	June 2012
<i>IBM; Nairobi, Kenya</i> Nominated for on-location philanthropic assignment. Collaborated with NGO and intergovernmental body to design a communications network for an energy-trading platform spanning ten Eastern Africa countries.	
<b>Communications Lead for IBM Software Group Midwest US Cluster</b>	2009-2013
<i>IBM; Austin, Texas</i> Helped organize and carry out monthly technical education events for IBM sites across the Midwest US.	
<b>Level 3 Customer Support Specialist for WebSphere</b>	Sep-Dec 2010
<i>IBM; Austin, Texas</i> Provided technical support for WebSphere customers.	
<b>Graphical User Interface Developer for WebSphere</b>	2005-2006
<i>IBM; Austin, Texas</i> Developed parts of the WebSphere GUI administrative console.	
<b>System Tester for WebSphere on z/OS</b>	2002-2005
<i>IBM; Poughkeepsie, New York</i> Led in defining and standardizing test processes; educated other teams on the product. Technical mentor for two summer interns.	

## CURRENT SUBMISSIONS

- [1] Colin Bannard, Mariana Leriche, Oliver Bandmann, Christopher H. Brown, Elisa Ferracane, Álvaro Sánchez-Ferro, José Obeso, Peter Redgrave, and Tom Stafford. Reduced habit-driven errors in Parkinson's Disease. *PsyArXiv Preprints*. <https://psyarxiv.com/b25tf>.

## PEER-REVIEWED PUBLICATIONS

- [1] Elisa Ferracane, Su Wang, and Raymond J. Mooney. Leveraging discourse information effectively for authorship attribution. *International Joint Conference for Natural Language Processing*, pages 584–593. 2017. <http://www.aclweb.org/anthology/I/I17/I17-1059.pdf>.
- [2] Elisa Ferracane, Iain Marshall, Byron C. Wallace, and Katrin Erk. Leveraging coreference to identify arms in medical abstracts: An experimental study. *Association for Computational Linguistics*, pages 86–95. 2016. <http://www.aclweb.org/anthology/W16-6112>.

## BOOK CHAPTERS

- [1] Fabio Albertoni, Henry Cui, Elisa Ferracane, James Kochuba, Ut Le, Bill O'Donnell, Gustavo Cezar de Medeiros Paiva, Vipin Rathor, Grzegorz Smolko, Rengan Sundararaman, and Tam Tran. *Implementing Kerberos in a WebSphere Application Server Environment*. IBM Redbooks. 2009.
- [2] Carla Sadtler, Fabio Albertoni, Leonard Blunt, Shu Guang Chen, Elisa Ferracane, Grzegorz Smolko, Joerg-Ulrich Vesper, and Sean Zhu. *WebSphere Application Server V7.0 Security Guide*. IBM Redbooks. 2009.

## CONFERENCE PRESENTATIONS

- [1] Elisa Ferracane. Leveraging discourse information effectively for authorship attribution. In *IJCNLP 2017*, 11/29/2017. 2017.
- [2] Elisa Ferracane. Leveraging coreference to identify arms in medical abstracts: An experimental study. In *Workshop on LOUHI at EMNLP 2016*, 11/16/2016. 2016.
- [3] Elisa Ferracane. The effect of informational and energetic masking on foreign-accent adaptation. In *Journal of the Acoustical Society of America, Jacksonville, Florida*, volume 1947, page 138. 2015. 10/26/2015.
- [4] Elisa Ferracane and Cynthia P. Blanco. Effect of noise on foreign-accent adaptation. In *Journal of the Acoustical Society of America, Pittsburgh, Pennsylvania*, volume 2435, page 137. 2015. 5/27/2015.
- [5] Cynthia P. Blanco and Elisa Ferracane. Language proficiency, context influence foreign-accent adaptation. In *Journal of the Acoustical Society of America, Indianapolis, Indiana*, volume 2109, page 136. 2014. 10/23/2014.

## OTHER PRESENTATIONS

- [1] Elisa Ferracane. Intro to NLP, b-o-w and language modeling. In *Women In Data Science Meetup, Austin, Texas*, 7/24/2017. 2017.
- [2] Elisa Ferracane. Intro to NLP and computational linguistics. In *UT Undergraduate Linguistics Society, Austin, Texas*, 3/3/2016. 2016.
- [3] Elisa Ferracane, Julia Galstad, and Jessica Freasier. Data science from scratch workshop: Naïve Bayes. In *Women In Data Science Meetup, Austin, Texas*, 7/28/2016. 2016.
- [4] Elisa Ferracane. Security in WebSphere Application Server 8.5: Liberty Profile and other updates. In *IBM System Z Security Conference, Montpellier, France*, 10/14/2012. 2012.
- [5] Montgomery Bauman, Elisa Ferracane, and David Follis. Multiple presentations. In *WebSphere Application Server Week, Ohio*, 4/3/2010-4/8/2010. 2010.
- [6] Elisa Ferracane. IBM WebSphere Application Server v7 for z/OS: What's new for security. In *Virtual WebSphere z/OS User Group meeting, online*, 4/12/2010. 2010.
- [7] Elisa Ferracane. What's new in WebSphere Application Server v7 security. In *IBM System Z Security Conference, Montpellier, France*, 10/13/2010. 2010.

## TEACHING ACTIVITIES & ADVISING

### Mentor for Linguistics undergraduate

*The University of Texas at Austin*

Mentoring undergraduate in RST-style discourse parsing in the medical domain.

Titan Page

Aug-Dec 2017

### Mentor in the Pre-graduate School Internship Program

*The University of Texas at Austin*

Mentor students in researching honor's thesis and applying to graduate school.

Madhav Narayan

María Gavino

Aug-Dec 2017

Jan-May 2016

### Class assistant for Summer Statistics Institute, Dept. of Statistics & Data Sciences

*The University of Texas at Austin*

Facilitated learning in 4-day workshop.

Large Scale Data Analysis with Hadoop and Spark

Big Data Analytics: Theory and Methods

May 2017

May 2016

## PATENTS ISSUED

- [1] Paul W Bennett, Elisa Ferracane, Daniel E Morris, and Michael C Thompson. Flexibly assigning security configurations to applications, August 27 2013. US Patent 8,522,307.
- [2] Paul W Bennett, Elisa Ferracane, William J O'donnell, and Michael C Thompson. Security role testing using an embeddable container and properties object, February 28 2017. US Patent 9,582,407.
- [3] Paul W Bennett, Elisa A Ferracane, Daniel E Morris, and Michael C Thompson. Dynamic switching of security configurations, March 22 2016. US Patent 9,292,702.
- [4] Elisa Ferracane, Paul William Bennett, William J O'donnell, Ajay Reddy Karkala, Ut Van Le, Michael Craig Thompson, and Maxim Avery Moldenhauer. System and method for merging security constraints when using security annotations, February 4 2014. US Patent 8,645,679.
- [5] William J O'donnell, Paul William Bennett, Elisa Ferracane, Ajay Reddy Karkala, Ut Van Le, and Michael Craig Thompson. System and method to control display of a realm name, January 20 2015. US Patent 8,938,791.
- [6] William J O'donnell, Paul William Bennett, Elisa Ferracane, Michael Craig Thompson, and Michael Dettlaff Christopher. Refreshing group membership information for a user identifier associated with a security context, April 22 2014. US Patent 8,707,405.
- [7] William J O'donnell, Elisa Ferracane, Paul W Bennett, and Michael C Thompson. System and method for maintaining dual identity in a server process, February 10 2015. US Patent 8,955,052.

## VOLUNTEERING

Volunteer at Drive-A-Senior Organization

*Austin, TX*

Provide transportation and companionship for senior citizens.

2014-present

Teacher Assistant for Hour of Code

*Pérez Elementary School; Austin, TX*

Introduced primary school children to coding concepts.

Dec 2015

Tutor at the Settlement Home for Children

*Austin, TX*

Tutored abused girls in multiple high school subjects.

2009-2013

Volunteer at Red Cross

*Austin, TX and Mayagüez, PR*

Helped people at shelters displaced by hurricanes.

1998, 2008

Volunteer at Engineer Week IBM

*Austin, TX*

Led educational workshops encouraging middle-school girls to pursue STEM careers.

2010, 2012

Tutor at Literacy Connections of Duches County

*Literacy Volunteers of America; Poughkeepsie, NY*

Taught adult student to read and write.

2003-2005