

Sarah Wiegreffe

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EDUCATION

Georgia Institute of Technology (Georgia Tech)
PhD in Computer Science
Advisors: Professors Jacob Eisenstein and Jimeng Sun

August 2017 - present

Research interest in natural language processing and machine learning with clinical applications. Specific interests include machine reading and information extraction, hierarchical representations of text, and text generation/summarization. Interested in temporal/hierarchical modeling of hospital clinical notes for the prediction of patient diagnosis and treatment.

Honors College at the College of Charleston
Bachelor of Science in Data Science, Summa Cum Laude
Minors in Mathematics and International Studies

August 2013 - May 2017

University of Tartu, Estonia
Visiting Student, Faculty of Mathematics and Computer Science

January - June 2015

PUBLICATIONS

Mullenbach, J., **Wiegreffe, S.**, Duke, J., Sun, J. and Eisenstein, J. *Explainable Prediction of Medical Codes from Clinical Text*. NAACL Human Language Technologies 2018. Full paper, accepted for oral presentation. New Orleans, LA, June 2018.

Wiegreffe, S., Anderson, P. and Obeid, J. *Can Classifications of Publications by Translational Categories be Automated?*. Proceedings of the American Medical Informatics Association (AMIA) Joint Summits on Translational Science. Extended abstract, accepted for poster presentation. San Francisco, CA, March 2017.

RESEARCH

Computational Linguistics Lab, Sunlab at Georgia Tech

August 2017 - present

Projects include tying convex optimization to word embeddings to learn under hierarchical constraints as well as domain-knowledge grounding for end-to-end learning of effective representations of clinical text via deep learning.

Research and Development Intern, Sutter Heath

May 2018 - August 2018

Worked with the Research, Development, and Dissemination group to develop deep learning methodology for interpretable disease prediction from clinical text.

Anderson Lab at the College of Charleston**January 2016 - May 2017**

Researched extensions to Google's Word2Vec algorithm used to generate word embeddings for variable-length documents. Investigated performance of the algorithm when used directly as a classifier, and whether this technique, along with similarly created ensemble methods, could outperform benchmark preprocessing and machine learning pipelines on topic recognition tasks.

**Medical University of South Carolina
Biomedical Informatics Center****May - September 2016**

Researched automation methodology for identifying translational research patterns in medicine. Built datasets of unlabelled medical abstracts and trained machine learning algorithms to classify by translational type.

**Medical University of South Carolina
Office of the Chief Informatics Officer****June - December 2015**

Designed a novel model forecasting the number of operating room cases in the university hospital on a given day, in order to improve hospital efficiency. Implemented the model as an automated visualization tool using Tableau which generated daily 30-day forecasts for departments across the hospital to assess.

Institute of Computer Science, University of Tartu, Estonia**Spring 2015**

Developed a high-performing model to predict a subject's age by MRI brain scan image. Implemented feature reduction via LASSO regression; identified brain volumes of note utilizing a hierarchy of features.

PROFICIENCIES

Languages Python, Bash, R, Java, SQL, SAS, Octave. Fluency in French.

Tools Pytorch, Dynet, scikit-learn, nltk, pandas, Git, TeX, Tableau, Oracle RDBMS, MongoDB

REVIEWING

NIPS Machine Learning for Healthcare Workshop (2017), AMIA Informatics Summit (2018, 2019), ACL Subreviewer (2018).

AWARDS

Computing Research Association (CRA-W) Grad Cohort for Women Attendee (2018).

Phi Kappa Phi Graduate Fellowship Recipient (2017).

Data Science Major of the Year, Departmental Honors (2017). College of Charleston.

Grace Hopper Scholar, the Anita Borg Institute (2016). Grace Hopper Celebration of Women in Computing Attendee (2015, 2016).

Crosby Computer Science Award (2014). Awarded by professorial nomination to the most promising student in an introductory computer science course at the College of Charleston.

William Aiken Fellow (2013-2017). A fellowship representing the top 1% of students at the College of Charleston.

International Scholar (2013-2017). One of ten students selected from the William Aiken Scholars to be mentored and pursue an internationally-focused degree.

TEACHING AND EMPLOYMENT

Graduate Research Assistant, Georgia Institute of Technology **Fall 2017 - present**

Teaching Assistant, Charleston Digital Corridor **Fall 2014**
MongoDB database course for adult professionals.

Math Lab Tutor, College of Charleston Center for Student Learning **Fall 2014**
Subjects including calculus, statistics, business math, precalculus and algebra.

Medical University of South Carolina Biomedical Informatics Center **Summer, Fall 2014**
Used relational database and SQL querying skills to test and improve the data warehouse for South Carolina's hospitals. Worked in a team environment to develop a testing process and write scripts to test web applications against the database.

Women in Computing Club at the College of Charleston **2014 - 2017**
President (2017), Vice-president (2016) and Treasurer (2015-16). Worked to promote diversity in computer science, host professional development workshops, and conduct community outreach.

OTHER PROJECTS/PRESENTATIONS

Wiegreffe, S. and Anderson, P. *A Survey of Word2Vec Inversion Methods in Topic Recognition Tasks*. Bachelor's Essay. Presented at the College of Charleston, May 2017.

Talk and poster presentations on context-specific distributed language representations for sentiment classification at the College of Charleston Department of Computer Science and School of Science and Mathematics research symposiums (2016, 2017).