Ian Stewart

PhD candidate in social computing.

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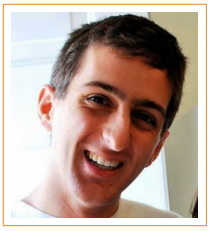

I apply natural language processing and statistical models to understand social behavior in online discussions. I am especially interested in detecting language variation, such as writing style differences, and explaining patterns in language use with social signals, such as audience expectations.

Education

2015–2020 (anticipated) **Georgia Institute of Technology**, *Ph.D. in Human-Centered Computing*.
Specialization in social computing.
Research interests: natural language processing, sociolinguistics, computational social science.
Advised by Jacob Eisenstein and Diyi Yang.

2010–2014 **Dartmouth College**, *A.B. Linguistics (cum laude), minor in Computer Science*.
GPA: 3.78 (cum.) 3.90 (major)
Thesis: "African American English syntax in Twitter."
Advised by James Stanford and Sravana Reddy.

Awards

March 2017 **Honorable Mention**, National Science Foundation Graduate Research Fellowship.
Runner-up in annual Graduate Research Fellowship competition. Award includes increased access to supercomputing resources.

August 2016 **Tuition Reimbursement Award**, Pacific Northwest National Laboratory.
Awarded to PhD interns in the National Security Internship Program who demonstrated outstanding performance in their summer research project. Covers one semester of graduate school tuition.

August 2015 **Great Promise Award**, Charles River Analytics.
Awarded to an intern in each company division who shows significant promise as a software engineer.

May 2014 **Academic Achievement Award**, Dartmouth College Linguistics Department.
Awarded to a graduating student who has demonstrated considerable commitment to research in linguistics.

Skills

Programming languages: Java (proficient), Python (proficient), R (intermediate), LaTeX(intermediate), Javascript/d3 (beginner)

Programming libraries: sklearn, statsmodels, pytorch, gensim, nltk, Beautiful Soup, matplotlib, pandas

Natural languages: English (native), French (fluent), Japanese (beginner), Spanish (beginner), Māori (beginner)

Research

Aug 2015 – present **Graduate Research Assistant**, School of Interactive Computing.
- Developing computational methods to describe and predict language variation in online discussions.
- Applying linguistic analysis to real-life situations such as breaking news events.
- Adapting statistical models such as causal inference and survival analysis to provide quantitative evidence for social theory.

Dec 2013 – June 2014 **Undergraduate Research Assistant**, Dartmouth College Linguistics Department.
- Designed regular expressions to extract non-standard sentence patterns (syntax) characteristic of African American English (AAE) in Twitter data.
- Determined correlation between AAE and community-level demographics: e.g. lower percentage AAE in communities with higher median age.
- Provided sociolinguistic evidence for diversity among AAE speakers.

Work

May 2018 – Aug 2018 **PhD Fellow**, Max Planck Institute for Demographic Research.
- Leveraged Facebook advertising API to assess immigrant behavior in the US.
- Collected, organized and analyzed large-scale data with statistical models to test hypotheses on immigrant assimilation.
- Engaged with interdisciplinary research team to set up survey for follow-up analysis.

May 2016 – Aug 2016 **PhD Intern**, Pacific Northwest National Laboratory.
- PhD intern through the National Security Internship Program.
- Formulated and tested methods to predict word dynamics over time in social media data.
- Implemented unsupervised clustering and smoothing to group semantically related words.
- Corroborated connection between distributional semantic meaning (measured with word vectors) and frequency dynamics.

June 2014 – Aug 2015 **Software Engineer Intern**, Charles River Analytics.
- Contributed to agent-based social network generation model (in AnyLogic and Java MASON), in collaboration with two scientists.
- Designed pipeline for social network synthesis and analysis, implementing metrics such as the network clustering coefficient and community modularity.
- Extracted parameters from large-scale social media data for network generation model, such as distribution of languages across Twitter users.

Teaching assistantships

- Jan - May 2020: Natural language processing (CS 7650)
- Sep - Dec 2015: Introduction to artificial intelligence (CS 6601)

Graduate Coursework

- Social Computing
- Design of Online Communities
- Information Visualization
- Natural Language Understanding
- Nonparametric Statistics
- Time Series Analysis

Publications

2020 I. Stewart, D. Yang, J. Eisenstein. Characterizing Collective Attention via Descriptor Context: A Case Study ofPublic Discussions of Crisis Events. ICWSM. Atlanta, GA.

2019 I. Stewart, R. Flores, T. Riffe, I. Weber, E. Zagheni. Rock, rap, or reggaeton? Assessing Mexican immigrants' cultural assimilation using Facebook data. WebConf. San Francisco, CA.

2018 I. Stewart, J. Eisenstein. Making "fetch" happen: the influence of social and linguistic context on nonstandard word growth and decline. EMNLP. Brussels, Belgium.

2018 I. Stewart, Y. Pinter, J. Eisenstein. Si o no, que penses? Catalonian independence and linguistic identity on social media. NAACL. New Orleans, LA.

2017 I. Stewart, S. Chancellor, M. De Choudhury, J. Eisenstein. #anorexia, #anarexia, #anarexyia: Characterizing Online Community Practices with Orthographic Variation. IEEE Big Data, SocialNLP Workshop. Boston, MA.

2017 F. Hohman, S. Soni, I. Stewart, J. Stasko. A Viz of Ice and Fire: Exploring Entertainment Video Using Color and Dialogue. Workshop on Visualization for the Digital Humanities. Phoenix, AZ.

2017 I. Stewart, D. Arendt, E. Bell, S. Volkova. Measuring, Predicting and Visualizing Short-Term Change in Word Representation and Usage in VKontakte Social Network. ICWSM. Montreal, Canada.

2015 E. Stickgold, B. Skarin, I. Stewart, C. Lofdahl. Extending generative models of large scale networks. 24th Conference on Behavior Representation in Modeling and Simulation (BRiMS). Washington, D.C.

2014 I. Stewart. Now we stronger than ever: African American syntax on Twitter. EACL. Gothenburg, Sweden.

Non-archival presentations

2019 I. Stewart. What natural language processing should do for LGBTQ people. Queer in AI Workshop at NeurIPS. Vancouver, Canada.

2017 I. Stewart, J. Eisenstein. Social and Distributional Predictors of the Success of Lexical Innovations in Online Writing. New Ways of Analyzing Variation (NWAV). Madison, WI.

2017 I. Stewart, J. Eisenstein. #thighgap to #thyghgapp: Incrementation of Orthographic Variation on Instagram. Diversity and Variation in Language Conference (DiVar1). Atlanta, GA.

2015 I. Stewart. We some young kings: Communities, age, and African American English online. 2015 Annual Meeting of the American Dialect Society. Portland, Oregon.

Teaching talks

2019 Language change tutorial. Updated materials and presented tutorial on behalf of advisor at IC2S2 in Amsterdam.

2019 Why do you talk like that? Minority languages and politics. Guest lecture for "Applications of Linguistics" course at Georgia Tech.

2018 Language and computers...and society! Guest lecture for "Language and Computers" course at Georgia Tech.

2018 Is it social or linguistic? Examining internal factors in language change. Workshop on New Methods in Computational Sociolinguistics. Leiden, Netherlands.

Reviewing

2019 ICWSM, NAACL (outstanding reviewer), ACL, Language Change workshop, W-NUT.

2018 ICWSM, NAACL, EMNLP, Workshop on Noisy User-generated Text (W-NUT).

2017 ICWSM, EMNLP, CoNLL.

2016 EMNLP.

Service

2019 Co-leader for Human-Centered Computing seminar (weekly discussion for PhD students).

2018-2019 Co-Chair of Graduate Student Council Travel Fund Committee.

2018 Reviewer for President's Undergraduate Research Awards (PURA) applicants.

Interests

- Music making
- Cookie baking

- Language learning

- Letter kerning