

## Annotated Bibliography

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Adams, A., & McCorkindale, T. (2013). Dialogue and transparency: A content analysis of how the 2012 presidential candidates used twitter. *Public Relations Review*, 39(4), 357–359. <https://doi.org/10.1016/j.pubrev.2013.07.016>

In this paper, the authors perform a content analysis of 2012 presidential candidate tweets, to analyze their use of twitter in terms of transparency and content/policy areas. The topic area has to do with presidential tweets and their content areas — the economy, events, etc. Authors investigate how candidates interact with voters, how transparent they are about tweet material, and who is tweeting it. Subtopics can include campaign strategy, propaganda, and government communication. The main gap in this area was a lack of research into the area of how 2012 candidates used twitter during the campaign season in terms of how transparent they were, the content areas they posted, and how/ if they engaged with voters. The authors used tweets from candidates Gingrich, Obama, Romney, Santorum, and Paul over the month of February in 2012. The corpus included 605 tweets in total, the authors used content analysis to code these tweets for further analysis. The authors discovered that rather than push agenda and policies, 2012 candidates largely used twitter to announce events and call attention to primaries in specific states. Authors noted that there was little transparency on the twitter accounts and little work in relationship building/ interaction with voters. This partially aligned with their hypothesis, as they noted that candidates had room to make up in interaction with voters. Limitations in this paper are an extremely small corpus size and time frame, though valuable insights are still provided.

Adji B. Dieng, Francisco J. R. Ruiz, David M. Blei; Topic Modeling in Embedding Spaces. *Transactions of the Association for Computational Linguistics* 2020; 8 439–453. doi: [https://doi.org/10.1162/tacl\\_a\\_00325](https://doi.org/10.1162/tacl_a_00325)

The authors created an embedded topic model that solves the problems that pop up in traditional topic modeling techniques when too large of a vocabulary is used. The main area of research is NLP, and the subdiscipline is topic modeling. Typical topic models, such as LDA, fail when large vocabularies are present. Often, vocabularies of models are pruned of frequently

used words and/or infrequently used words. This can limit the scope of the model and even remove terms that are important. The data used were a corpus of 11.2K 20NewsGroup and for 100 topics and a similar corpus from The New York Times. The authors found that the ETM model outperformed other interpretable models in terms of predictions and topics. This aligned with their hypothesis. This paper will likely be extremely valuable to my own work, as presidential speeches typically have large vocabularies, filled with specific, frequently used terms. Thus, this method of topic modeling could be more useful than traditional techniques.

Benoit, W., Goode, J., Whalen, S., & Pier, P. (2016). "I am a candidate for president": A functional analysis of presidential announcement speeches, 1960-2004. *Speaker & Gavel*, 45(1). <https://cornerstone.lib.mnsu.edu/speaker-gavel/vol45/iss1/3>

This paper investigates the nature of presidential announcement speeches, from both parties, over a 44 year period — analyzing seventy-five announcement speeches.

The area and topic of this research has to do with presidential candidate speeches and their natures and differences between the two parties — for example republicans talk more about "character." Sub topics in this area include politics, linguistics, and propaganda. The main purpose of this paper is to advance the area of content analysis in presidential candidate announcement speeches. They expect, naturally, that most announcement speeches will be overwhelmingly positive and not have significant amounts of attacks or defenses in regards to other candidates. Authors also note that they expect an even split in touches upon character and policy in these speeches. As mentioned before the authors sourced 75 presidential announcement speeches from 1960 -2004. Speeches were obtained online through various methods. They analyze the speeches through the theory of political campaign discourse and issue ownership theory. The first theory stems from three functions of a speech — acclaims, attacks defenses — in two areas — policy and character. The authors also use issue ownership theory to see if candidates stress issues their party "owns" more in their speeches to attract voters. The authors found results that aligned well with their hypothesis, announcement speeches were mainly positive and most speeches had far more acclaims than attacks or defenses — more self praise. They also noted that, as they expected, candidates pushed issues owned by their own party more often, as they expected too. The authors expected their conclusions as I outlined above, I am not surprised by the results. An inherent limitation in this study is the short time range in these announcement speeches; there existed speeches prior to

1960 and after 2004. This research could lead to other considerations of how, for example, candidates' main points evolve over time.

Finity, K., Garg, R., & McGaw, M. (2021). A text analysis of the 2020 U.S. Presidential Election campaign speeches. In *2021 Systems and Information Engineering Design Symposium (SIEDS)* (pp. 1-6). Charlottesville, VA, USA.  
<https://doi.org/10.1109/SIEDS52267.2021.9483735>

The authors various aspects of presidential campaign speeches, such as repetitiveness and sentiment, in order to uncover what resonates with voters. The areas of research are public speaking, text analysis, NLP, and text mining. The gap in knowledge is a lack of research into stylistic differences of campaign speeches and how this affects voters.

The dataset used is made up of transcripts that were automatically generated during the 2020 presidential election. The videos used were originally found on YouTube. The YouTube API consists of various fields like “duration”, that were useful in the automatic transcription process. The methods used included various NLP techniques, including PCA, LDA, TF-IDF, and HCA. The authors discovered significant differences between political candidates. Specifically, they found differences between those on the same ticket. For example, Trump’s speeches tended to be more emotional, while Pence was more formal and measured. These different speeches target different subsets of voters, which aligns with the hypothesis that stylistic differences in speeches resonate better with certain audiences. The main limitation of this research is in data collection. The ideal set of transcripts was unavailable to the authors, so they had to turn to YouTube. The automatic transcript generation was not very complete, and lacked important information such as punctuation to represent pauses in speech. This article might be relevant to my own work because I could apply this stylistic analysis of speeches to historical speeches. Perhaps this could be useful in identifying patterns in speeches that align more with one party than the other.

Gonçalves, P., Araújo, M., Benevenuto, F., & Cha, M. (2013). Comparing and combining sentiment analysis methods. *Proceedings of the first ACM conference on Online social networks*, 27-38. <https://doi.org/10.1145/2512938.2512951>

The authors compared 8 popular sentiment analysis techniques on Online Social Network data in order to combine some of the methods and create a more comprehensive approach than any of the methods alone. The two main areas of research are computational linguistics and natural language processing. The problem addressed by the paper is that, currently, it is “unclear which method is better for identifying the polarity (i.e., positive or negative) of a message as the current literature does not provide a method of comparison among existing methods.” This is a direct quote from the abstract. There are two different datasets used. First, a “near-complete log of Twitter messages posted by all users from March 2006 to August 2009”. This dataset includes nearly 2 billion tweets. A dataset this large enables sampling to take place without sampling bias. The second dataset was 6 sets of messages that were labeled by humans as positive or negative. This dataset came from SentiStrength, and included messages from MySpace, Twitter, Digg, BBC forum, Runners World forum, and YouTube comments. The authors' discovery aligned with their hypothesis. Specifically, when they combined two methods, they were able to increase the coverage to 92.75%. This is an improvement, as the best method alone could only cover 91%. The overall combined method had a coverage of 95%. Precision and accuracy remained high for this method. The authors were not surprised by their results, and were fairly pleased, as significant, consistent improvements were made to the pre-existing methods. The article did not mention specific limitations, but the authors indicated that they wanted to further expand on this research. Specifically, they want to continue to test out additional methods and determine if they could be included in the combined model. The authors indicated that they wanted to consider diverse categories of sentiment, other than simply positive or negative. This could be very beneficial, as it could help us to determine party affiliation.

Khader, Muhannad M. "A Digital Study on Public Speaking: NLP & Arguments Analysis of the First Corpus of Arabic Debates." College of Humanities and Social Sciences, Hamad Bin Khalifa University, 2020.

This thesis by Mohammad Majed Khader explores the use of Natural Language Processing (NLP) to analyze competitive Arabic debates, specifically focusing on how NLP features like sentiment and speech style affect speech acceptance and the impact of speaker gender on these factors. Utilizing tools like QATS, Repustate, Antconc, and Light Tag, the study analyzes 12 recorded debates from QatarDebate international tournaments. Findings reveal professional

adjudicators prioritize good argumentation over linguistic features, with no significant gender differences in linguistic features or scoring observed. This research demonstrates the potential of computational methods in analyzing and training for Arabic debates.

Kooragama, K.G.C.M., et al. "Speech Master: Natural Language Processing and Deep Learning Approach for Automated Speech Evaluation." 2021 IEEE 12th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), 2021, doi: 10.1109/IEMCON53756.2021.9623163.

The "Speech Master" is an innovative online tool designed to enhance English speech delivery through natural language processing, machine learning, and deep learning techniques. It evaluates aspects such as content, grammatical accuracy, richness, facial expressions, and flow with over 80% accuracy. This tool offers a practical solution for improving public speaking skills globally, overcoming traditional method limitations like accessibility and time constraints. It benefits from the universal importance of effective English communication in professional and personal realms and addresses the need for automated speech evaluation amidst challenges like the pandemic and reluctance towards conventional learning methods.

Liao, W., Zeng, B., Yin, X. *et al.* An improved aspect-category sentiment analysis model for text sentiment analysis based on RoBERTa. *Appl Intell* 51, 3522–3533 (2021).  
<https://doi.org/10.1007/s10489-020-01964-1>

The authors proposed a new method of aspect-category sentiment analysis for a deeper understanding of the true sentiment of a text. The areas of research are NLP, computational linguistics, and the subdiscipline is sentiment analysis. Existing models (LSTM) are not truly bidirectional, so they aim to find success by treating each aspect-category as a subtask. The dataset used was a public dataset from AI Challenger 2018, translated into english. Five aspect categories were selected: location\_traffic\_convenience, service\_waiters\_attitude, service\_parking\_convenience, environment\_cleaness and dish\_recommendation. The RoBERTa based models did outperform the other models that were in this comparison. However, they were also the least efficient, as a result of having so many network layers. The best overall models were the RACSA, as it utilizes the advantages of RoBERTa to combine features of 1D-CNN. The authors were not surprised by the results. They found success in

treating each of the aspect-categories as a subtask. In future work, they aim to combine RACSA with neural networks, as there was success with graph neural networks in text classification. This paper could be useful to my work, since presidential speeches are typically very nuanced. We aim to try and use sentiment analysis beyond positive and negative, so it might be useful to be able to split up phrases or sentences into different aspect-categories.

Mann, William C. "Toward a Speech Act Theory for Natural Language Processing." University of Southern California Marina Del Rey Information Sciences Institute, March 1980, ADA087250, <https://apps.dtic.mil/sti/citations/ADA087250>.

The report titled "Toward a Speech Act Theory for Natural Language Processing" by William C. Mann from the Information Sciences Institute at the University of Southern California delves into the application of Speech Act Theory (SAT) in natural language processing (NLP). It discusses the advantages of recognizing the illocutionary force behind utterances for improving NLP systems, such as enhancing implicit communication understanding, identifying textual relationships, and applying AI knowledge to new NLP tasks. The report introduces methods for identifying illocutionary forces and simulating speech act effects, highlighting SAT's potential to structurally analyze and respond to language within NLP frameworks.

Zavattaro, S. M., French, P. E., & Mohanty, S. D. (2015). A sentiment analysis of U.S. local government tweets: The connection between tone and citizen involvement. *Government Information Quarterly*, 32(3), 333–341. <https://doi.org/10.1016/j.giq.2015.03.003>

In this paper, the authors analyzed how government communication, based on sentiment, affected constituent participation and engagement. The area and topic of this research — similar to our proposed research — is that of federal government communication (in this case the United States). It's in the context of Twitter and city government communication to citizens in that area. It contributes to sub areas of government communication and social media use. This paper seeks to address how governments are mobilizing communication efforts through social media platforms, in this case Twitter, and how their communication affects citizen

engagement/ collaboration. They largely expect to find that most government communication is normal/ neutral, but also note that a positive tone could in turn induce more citizen participation. The dataset is from 125 United States local government's twitter accounts (17k tweets). Tweets were collected over a five week period. This was the basis of the corpus, from which outsourced methods are performed. Mergel's framework — transparency, participation, collaboration — was applied to analyze engagement from the citizens and machine learning methods were put in place to analyze sentiment of the tweets. The authors find that positive tone in communications (tweets) causes more citizen participation in the cities that are tweeted to. They noted that overall most government communication is neutral and largely just pushes information, but those that have more positive tones do in fact inspire participation. The authors noted that the results partially supported their hypothesis. Though some instances did show that positive sentiment caused higher citizen participation than neutral tweets, there were other factors that could come into play in increasing participation — like other interactions such as retweets. Thus, their results do align in some respect to their hypothesis, which I am not surprised by. Limitations can include the fact that other social media methods seemed to be vital in inspiring citizen participation, like retweeting, liking, and sharing citizens posts, too. Additionally, sentiment analyzers are not 100% correct, possibly mislabeling some tweets.