**PRODUCTS/APPS**

**Ground News**

* Mobile application w/ basic/pro versions, also has a web app
* Compare how a story is being covered across the political spectrum and around the world
* News source comparison platform
* Sees how different sources covers the same story
  + Is it only being covered by right/left sources?
* Organize news based on geographic filters
* Watch how stories change over time (timeline when different articles are released)
* No implementation details

**BLUFFNet: News Bias Check**

* Web plugin
* Reveals bias in news articles on the Google Search page using a deep learning model

**PAPERS/ARTICLES**

**Evaluating the News:** **(Mis)Perceptions of Objectivity and Credibility**

<https://link.springer.com/article/10.1007/s11109-018-9458-4>

* One important indicator/hint of truthfulness is reliability of source → a known, more respected source is more reliable, whereas an unknown source could potentially be fake/misleading
* Identifies the unique effect of message content on **perceptions** of news bias and source credibility, while holding source constant

**Media Bias Detection using Deep Learning Libraries in Python ⭐**

<https://towardsdatascience.com/media-bias-detection-using-deep-learning-libraries-in-python-44efef4918d1>

* Python environment with Tensorflow and Keras used to build a NN of identifying (with good performance) if news stories are left or right leaning
* Also tried to identify source of story with ML model

**Assessing the News Landscape: A Multi-Module Toolkit for Evaluating the Credibility of News**

<https://dl.acm.org/doi/pdf/10.1145/3184558.3186987>

**Political New Bias Detection**

<https://portfolios.cs.earlham.edu/wp-content/uploads/2018/12/senior-thesis-political.pdf>

**Linguistic Models for Analyzing and Detecting Biased Language**

<https://web.stanford.edu/~jurafsky/pubs/neutrality.pdf>

Types of Bias:

* **Epistemological**: linguistic features that subtly modify the believability of a proposition
* **Framing**: using subjective words of phrases linked with a particular point of view
* **Demographic**: texts with presuppositions about particular genders, races, or other demographic categories

**Datasets**

<https://www.kaggle.com/snapcrack/all-the-news>

All the news: 143,000 articles from 15 American publications; split into 3 CSV files

**Fact & Bias Checking Web Resources**

* [FactCheck.org](https://www.factcheck.org/) - nonpartisan, nonprofit “consumer advocate” for voters that aims to reduce deception/confusion in US politics; monitor factual accuracy of what is said by US political players in TV ads, debates, speeches, interviews, and news releases
* [Politifact](http://www.politifact.com/) - fact-checking journalism
* [AllSides](https://www.allsides.com/unbiased-balanced-news) - exposes bias and provides multiple angles on the same story so you can quickly get the full picture
* [Snopes](https://www.snopes.com/) - “online touchstone of research on rumors and misinformation”

[Media Bias Fact Check](https://mediabiasfactcheck.com/) - independent online media outlet that evaluates the level of bias of a media publications (list over 3300 sources)

**Ideas Based off of Prior Art**

* Instead of trying to determine the extremity/bias of an article in isolation, compare articles from different sources written on the same topic
  + How would we determine that articles cover the same topic?

**Exploration of Classifying Sentence Bias in News Articles with Machine Learning Models**

<https://digitalcommons.uri.edu/cgi/viewcontent.cgi?article=2294&context=theses>

News publications **try** to be as objective and as unbiased as possible

Our assumption: people want access to unbiased, factual information

**Levels of Bias in News**

1. Outlet level
   1. What pieces the outlet decides to cover
   2. How articles are featured on websites (bias by placement, story selection, placement)
   3. Particular outlet reports one set of events but not another (bias by omission, story selection)
2. Article level
   1. What perspectives are used
   2. Title
   3. Which photographs are chosen
   4. Leaving out one side of an article (bias by omission)
   5. Including more sources that support one view over another (bias by selection of sources)
3. **Sentence level**
   1. **Syntax**
   2. **Semantics (bias by spin, labeling)**
4. Word level
   1. Word choice

Possible ML models

* CNN
* SVM
* RNN
* NN
* Naive Bayes models
* Logistic regression

Word embeddings:

* Word2vec
* GloVe
* fastText

Word embedding:

* Word frequencies, term frequency-inverse document frequency, word2vec, GloVe, create own feature space

Ways to categorize bias:

* positive/negative
* positive/negative/neutral
* positive/negative/neutral/both
* conservative/liberal

<https://www.tandfonline.com/doi/full/10.1080/1369118X.2018.1444076>

<https://www.tandfonline.com/doi/full/10.1080/08838151.2020.1757365>

<https://nlp.stanford.edu/pubs/pryzant2020bias.pdf>

<https://arxiv.org/pdf/2002.06644.pdf>