Operation: Debunker

DSI Capstone Presentation

Charles Rice

Whether we take the signified or the signifier, language has neither ideas nor sounds that existed before the linguistic system, but only conceptual and phonic differences that have issued from the system.

-- Ferdinand de Saussure, “Course in General Linguistics,” 1916

"As a wizard, I must remind you that words have power," said Ridcully
"As a politician, I must tell you I never forget it," replied Vetinari.
*"Yet you choose to use **these** words at **this** time?"*

"Ah, so it is not words, but context that has power?"

*- Terry Pratchett, **Unseen Academicals***

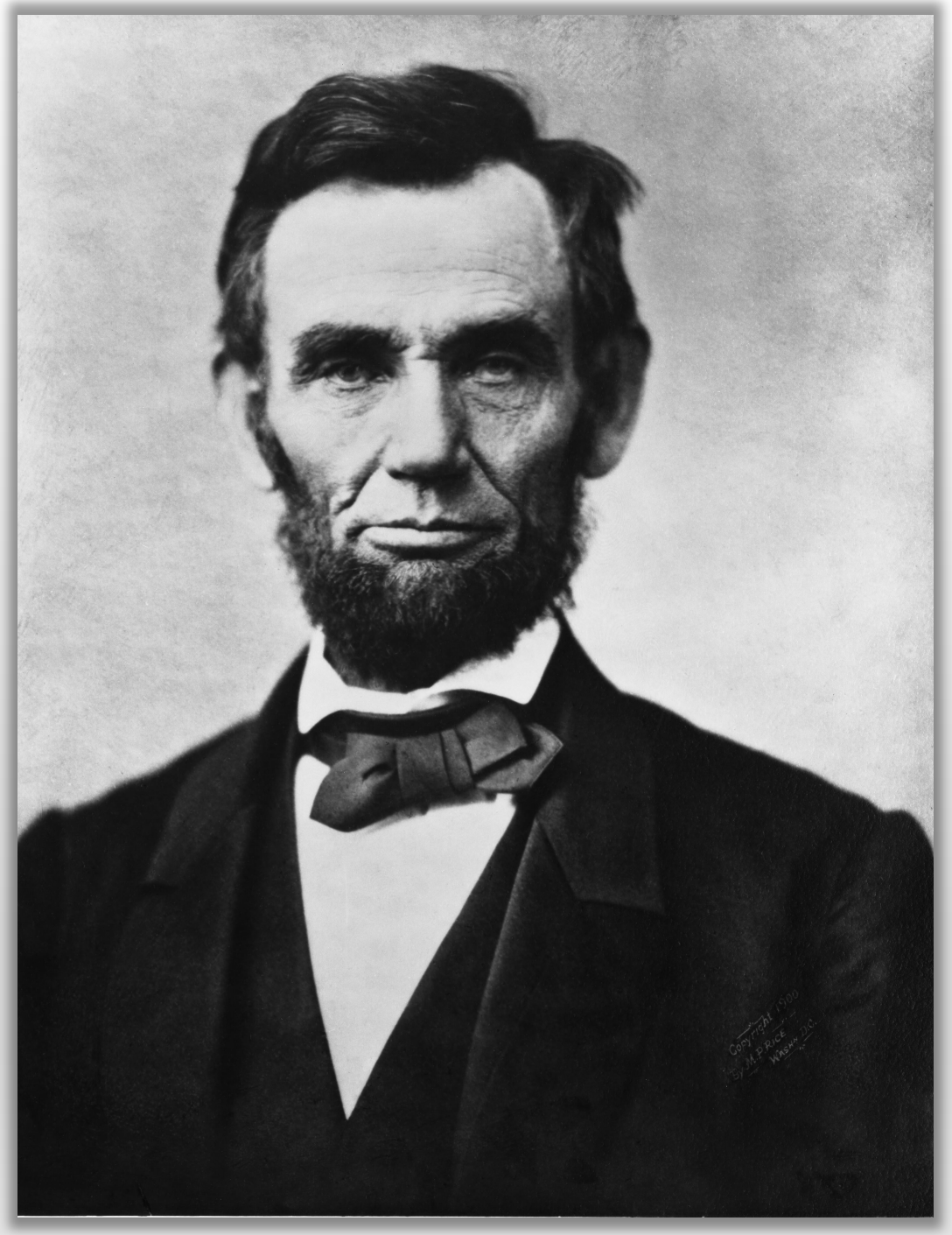
The best way to predict the future is to create it.

-Abraham Lincoln

-Denis Gabor, “Inventing the Future,” 1963

-Alan Kay, Chief Scientist, Atari, 1982

-Peter Drucker, Management Guru, 1986

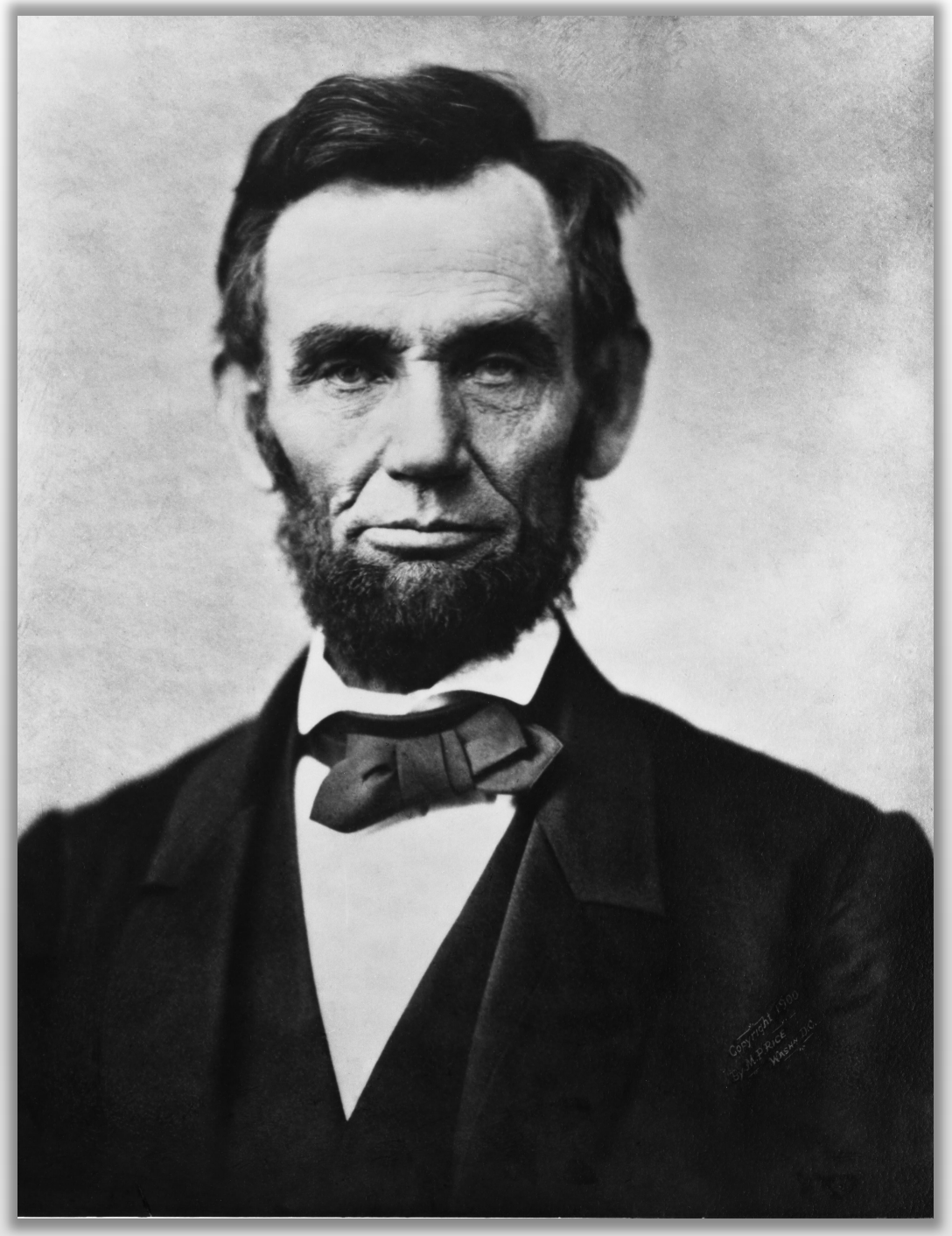


The best way to predict the future is to create it.

~~-Abraham Lincoln~~

-Michael J. Astrue, Commissioner
Social Security Trust Fund

Attributed to Lincoln in 2008



1. This isn’t Nam.
2. There are rules.

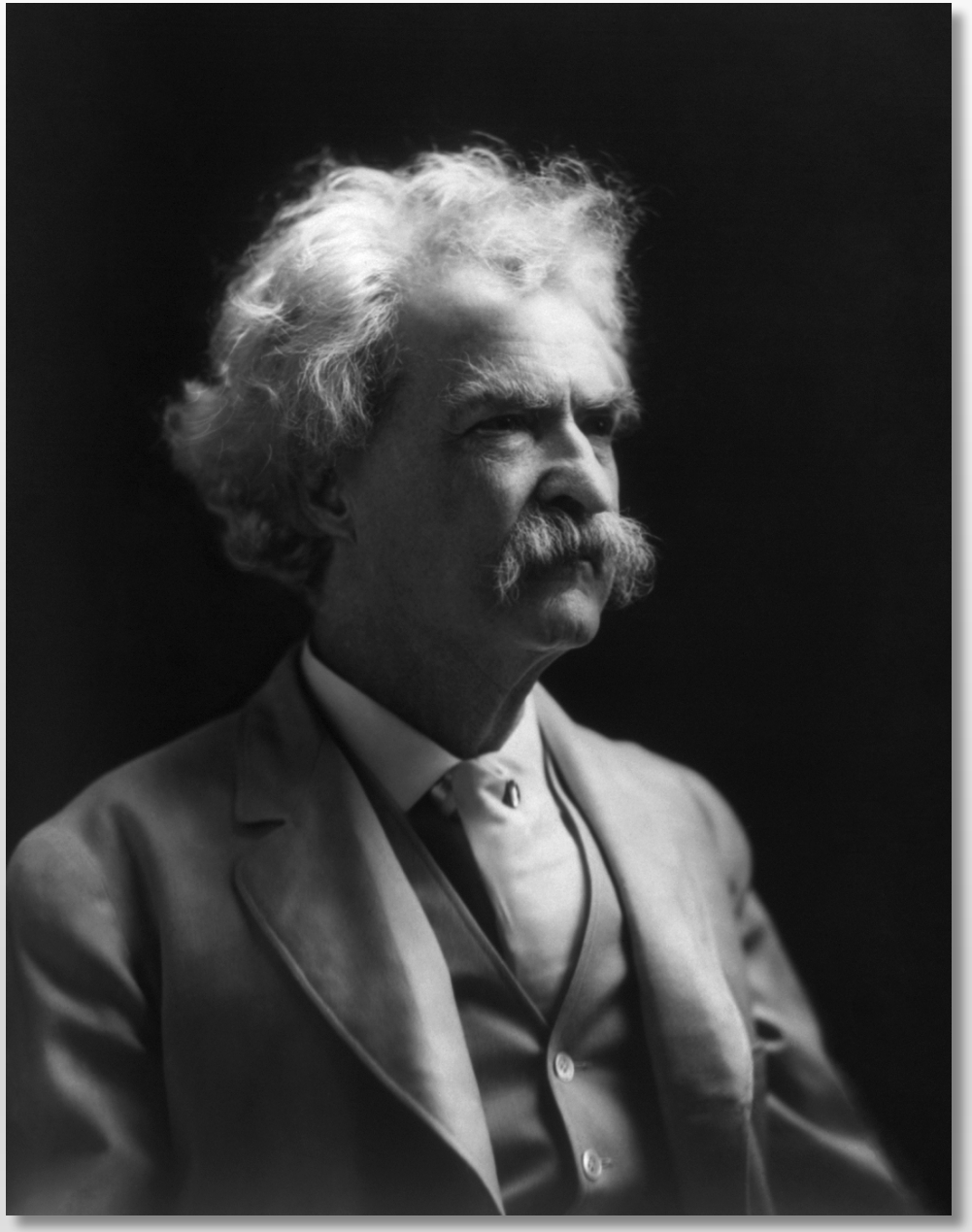
Writers and Their Sayings

- We know that writers develop unique styles
- Can those styles be at all predictive of what they say, or are reported to have said?

- Mark Twain (1835 – 1910)
- Oscar Wilde (1854 – 1900)
- Abraham Lincoln (1809 – 1865)

You Will, Oscar…

- Twain was a writer – 3m+ words
- Wilde was a wit and aesthete
- Lincoln was a politician, not a writer
- All three present issues for this project
- Furthermore, styles change over time



“Figures often beguile me, particularly when I have the arranging of them myself; in which case the remark attributed to Disraeli would often apply with justice and force: "There are three kinds of lies: lies, damned lies and statistics.”

- Mark Twain's Own Autobiography: The Chapters from the North American Review

Cleaning and Preprocessing

- Corpora were collected from Project Gutenberg
- Both Twain and Lincoln have “Collected Works” files
- Wilde had to be assembled
- All three were cleaned by hand
  - Approximately 100,000 words removed
  - Editor’s marks, formal language, dates, times, salutations, valedictions

Preprocessing, Continued

- Initially planned to use TFIDF
- So I split the data into pseudo-documents at the character, word, and sentence level
- Equal numbers of observations (1,000, 500, and 100) for all three

Still Preprocessing …

- Started with a basic CountVectorizer
- Manual pseudo-gridsearch tweaking hyper parameters
- Wound up using two vectorizers
  - Word and 1-4 character level
  - This conforms to research indicated character-level ngrams have more predictive power
- Naïve Bayes for the modeling

…Some are useful

- Initial precision scores were extremely high – between .8 and .95
- Ran a train-test split for Naïve Bayes and jerry-rigged a 4-fold cross-validation
- Mean precision scores remained high, although there were some interesting patterns
- Scores fell off using TFIDF vectorizer, so stayed with CVEC
- Naïve Bayes performed so well that I did not see the need to test others.

So, after all that, did the model do what it was supposed to?

No.

No, it did not.

Of the 91 quotations with known attributions, only 8 were correctly guessed by the model.

That quote was not among the correct

Science!

- Over the weekend, corrected the class imbalance
- Added from James Allen, ThoughtCatalog
- Total modern corpus of 600k words
- Significant improvement
- Including *that* quote

Next Steps

- ~~Correct the class imbalance~~
- ~~Identify a source of ‘modern’ text that more closely matches what I’m trying to debunk~~
- There are several variations to try, including gridsearch for CV
- Add authors over time
- Identify a way to streamline the pre-processing

Words are the currency of thought, the circulating medium of ideas. And we pay as steep a price for muddled thinking as for muddled speaking.