Machine Learning & Misinformation:

How algorithms can help us identify “alternative facts”

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Why are we here today?

Problem

Determining truth of an article manually cannot keep up with the rate at which news articles are produced, shared, and cited.

Proposal

Utilize machine learning to identify patterns in fake news and apply a filtering algorithm to articles shared on Bookface.

Recommendations

Implement our model to assign credibility scores and optimize credibility thresholds to automatically label clearly real or fake news and minimize manual fact-checking.

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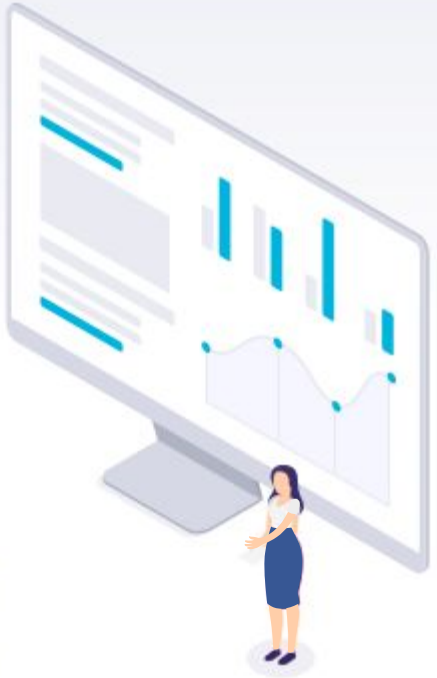
Today, we'll go over:

Process:

- Character analysis
- Syntactical breakdown
- Sentiment analysis
- Significant words

Results:

- Exploratory findings
- Uninformative features
- Modeling results
- Recommendations



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Our process

- **Character analysis**
  - Sentence and word length
  - Punctuation
- **Syntactical breakdown**
  - Part-of-speech tagging
- **Sentiment analysis**
  - Positive, negative, neutral, & compound
- **Significant words**

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Exploratory findings

- **Average length:** Fake articles are longer
  - 442 words for fake vs. 393 for real
- **Fake news articles:**
  - Negativity, interjections & symbols
- **Real news articles:**
  - Less negativity, more numbers & nouns
- **Time series** & **clustering** don't help
- Very **similar words** used
  - "Trump" in fake news, "President" in real news

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Modeling results

- **Logistic regression model:**
  - Regularization & scaled data
  - Cross-validated score on test data: 85.9
  - 11% false negatives, 1% false positives
- **Recommendations for use:**
  - Optimize credibility thresholds

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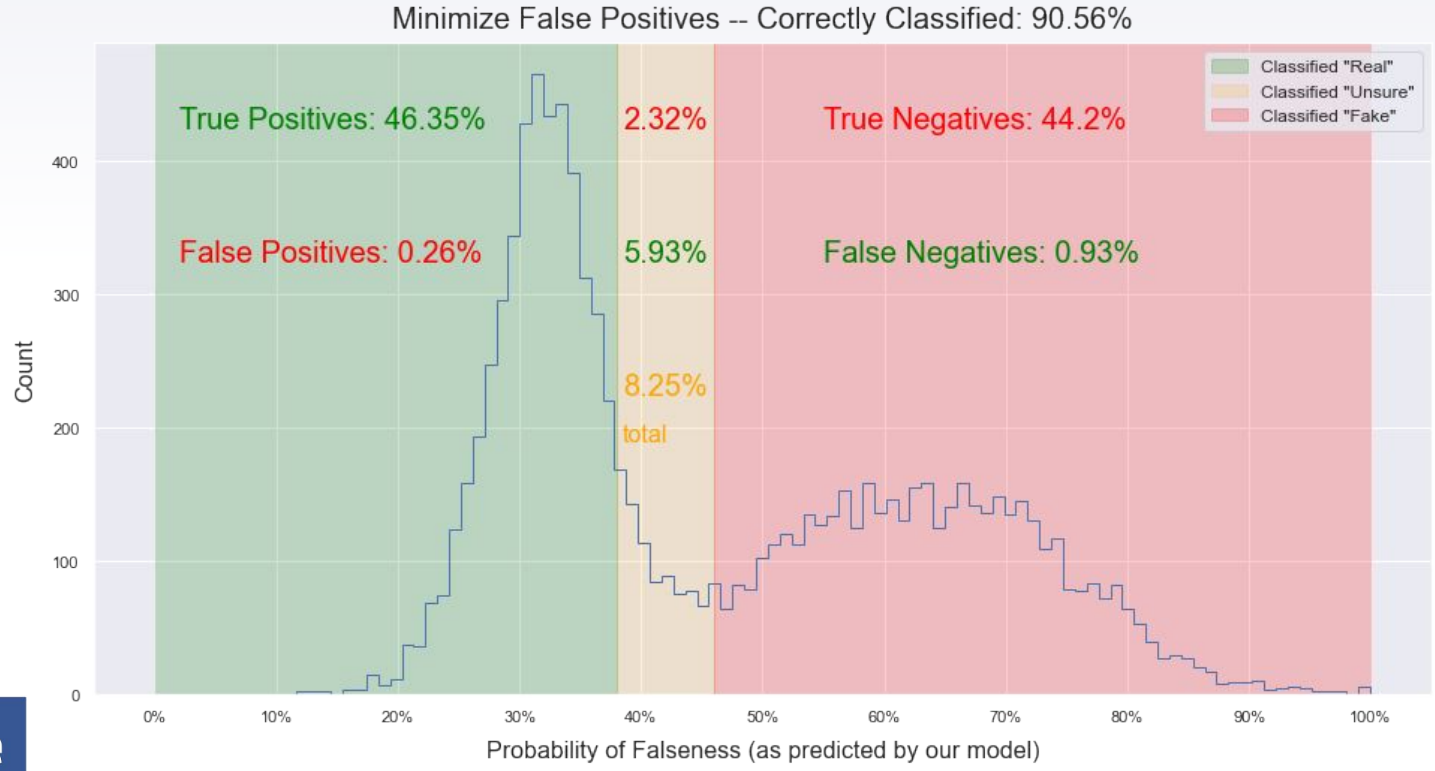
Modeling results



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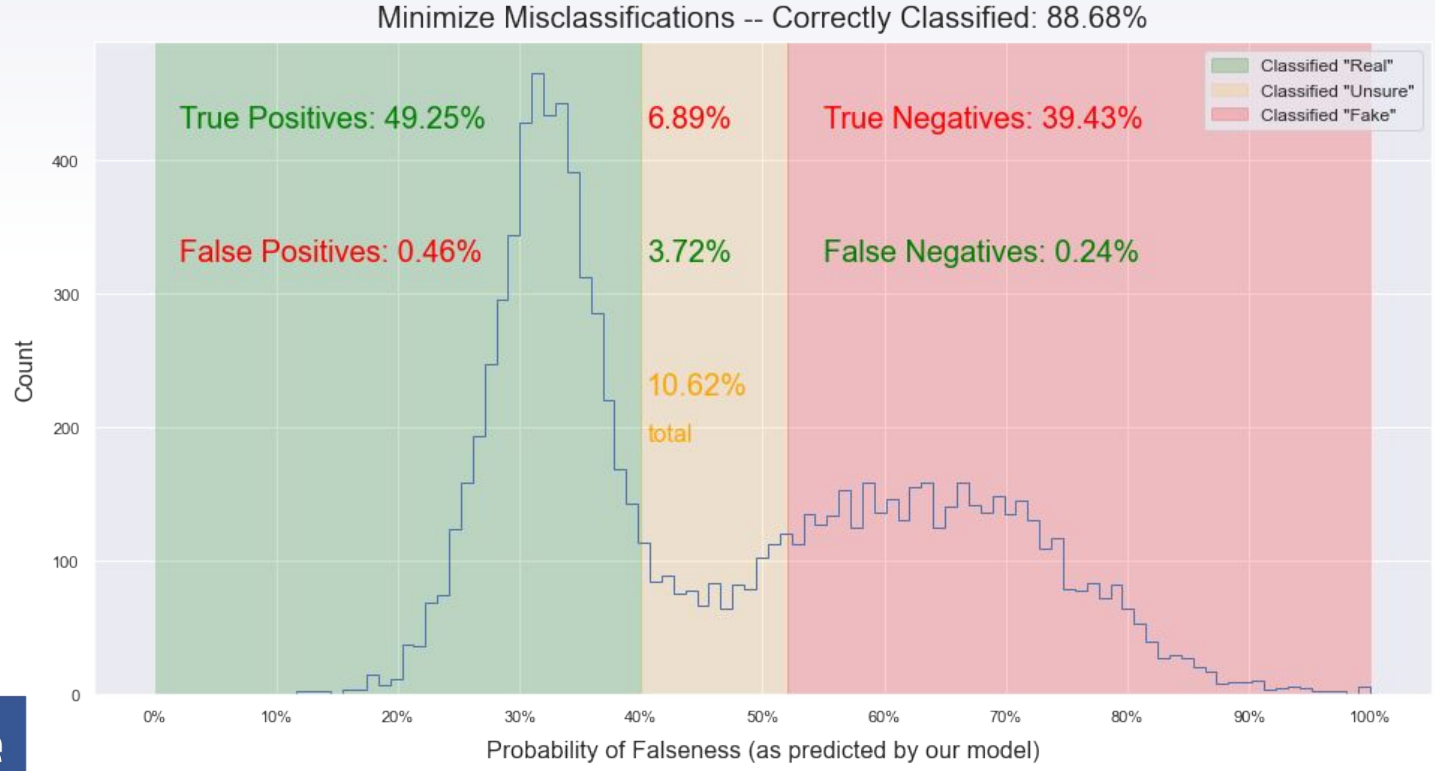
Modeling results



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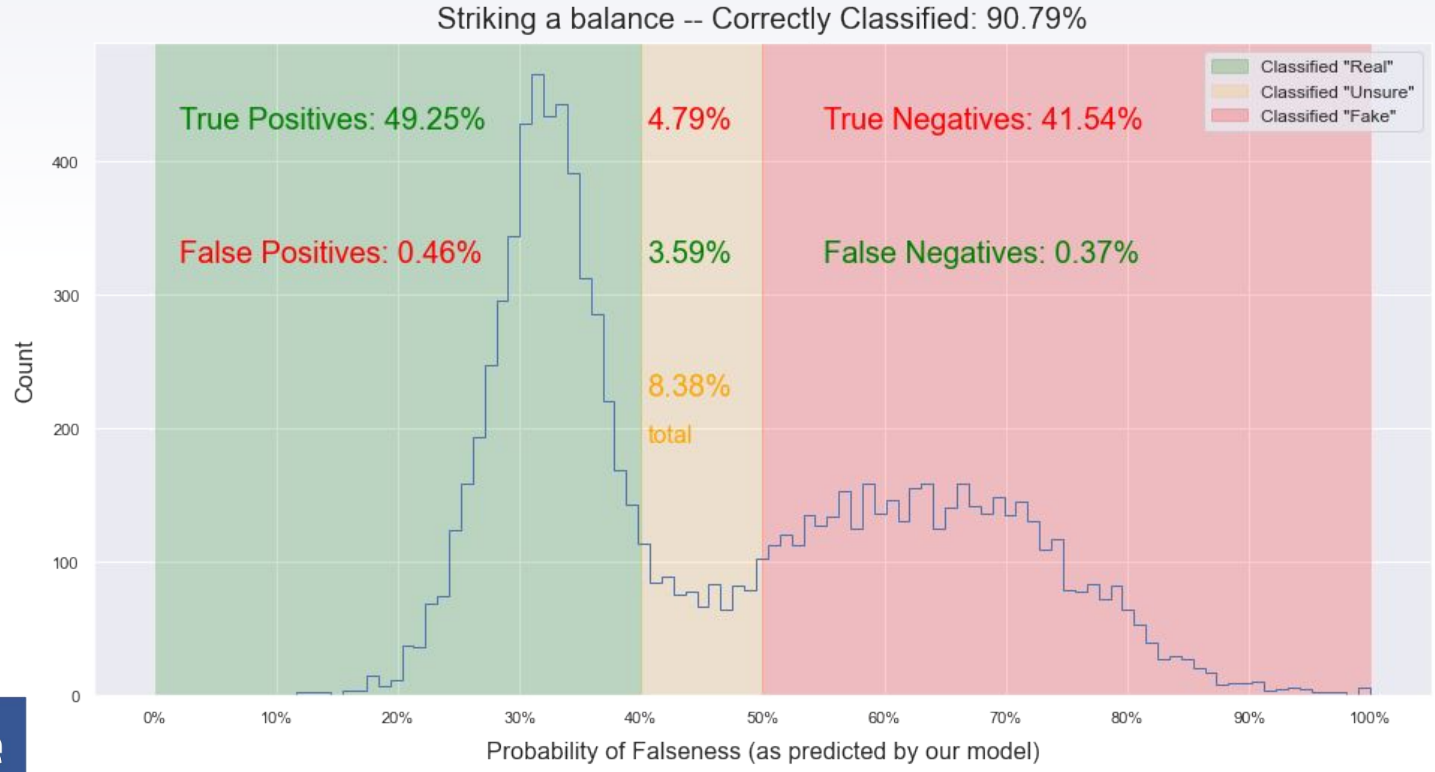
Modeling results



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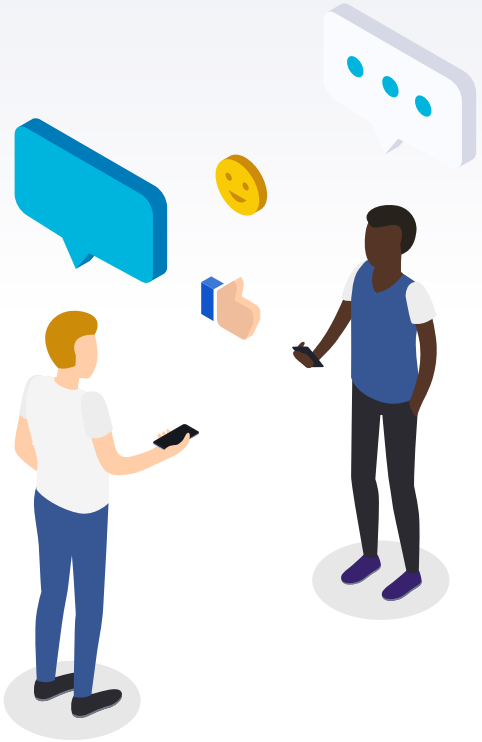
We can clean up Bookface together!

Any questions?



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