

What AI can tell us about the U.S. Supreme Court

Eric Chuu

University of California, Los Angeles

May 3, 2016

Overview

- 1 Background of the article
- 2 Model Details
- 3 AI, Machine Learning in the Model
 - Text-Based Analysis
 - Cross Validation
- 4 Future Considerations
 - Extended models
- 5 Conclusion and Summary

Background

- Lifetime tenure of the U.S. Supreme Court's justices
- People have vested interest in their decisions and deliberations
- Model the Supreme Court with machine learning to predict decisions
- Identify which of the nine justices were likely to “swing,” or waver on certain issues

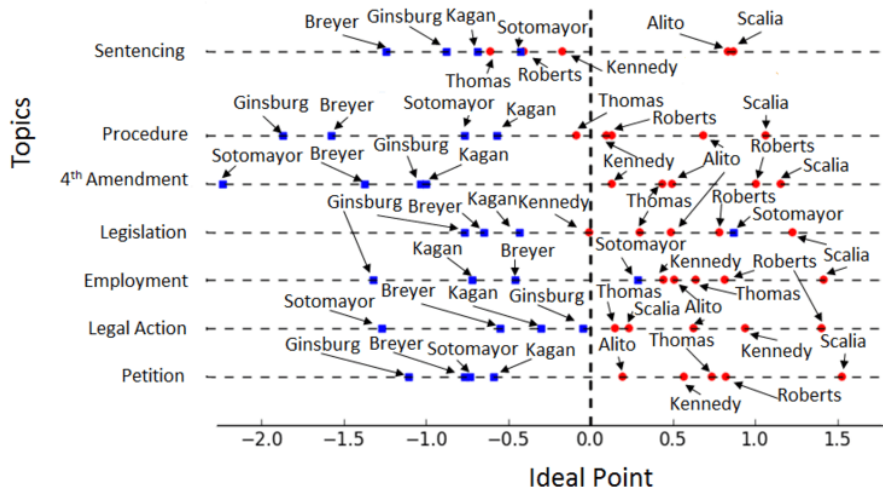


- Process of deliberation
 - Initial stance
 - Hearing
 - Decision made during private meeting
 - Write opinions
- Old models pinpointed news coverage, voting records as predictors for a justice's stance on a particular issue
- Supreme Court Ideal Pointer Minter (SCIPM): incorporates text analysis

Model Details

- Cases often have many different issues
- Model looked at opinion text that the justice writes
- Correlation between the text and how each justice feels on particular issue
- Model generated a spectrum of specific issues justices' views

Model Details



Checking the Model

- 1 Looked at cases that were decided by a 5-4 margin
- 2 Identify the swing justices
- 3 Kennedy, Roberts, Thomas were often in the same group, consistent with the model's predictions

Other observations: Top voter was Kennedy, decisions tended to cluster based on political party

Text-Based Analysis

- ① Two types: topic analysis and sentiment analysis
- ② Using the two, the model uses historical opinion text to “learn” and uses these to help classify the decisions when reading new opinion text
- ③ The model looked at: number of words, identifies key words that pertain to each issue, assigns a weight to each issue
- ④ Classification problem

DEATH

Firearms

School

BENEFIT

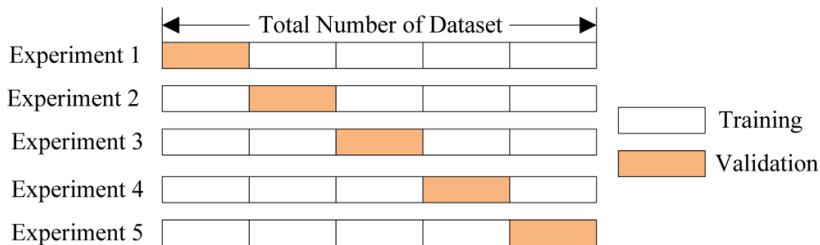
Illegal

Cross Validation

Definition (Cross Validation)

A model validation technique for assessing how the results of a statistical analysis will generalize to an independent data set.

- Training set vs. Test (Validation) set
- K-Fold Cross Validation



Additions to the Current Model

- Evaluate public response: social media, popular cases
- Use text transcripts of oral discussion
- Natural Language Processing (NLP)
 - Using computers to find meaning in human language

Conclusion

- Text-based analysis becoming more flexible in application: election outcomes, customer feedback, etc.
- Machine Learning/AI advancements and improving techniques leading to increased insight into previously hidden processes
- The model, if improved, can gauge in which direction the judicial system is headed: political, social, economic stances of the justices
 - Alter perception of judicial system and incite potential changes

Bibliography



M. R. Islam, T. Hossain, S. Krishnan *What AI can tell us about the U.S. Supreme Court*, The Conversation, 2016.



B. Pang, L. Lee, *Opinion mining and sentiment analysis*, now the essence of knowledge, 2008



J. Fang, *How Text Analytics Works*, Medallia