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

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Overview

Background

- Lifetime tenure of the U.S. Supreme Court's justices
- People have vested interest in their decisions and deliberations
- Model the Supreme Court's decision-making process
- Identify which of the nine justices were likely to "swing," or waver on certain issues

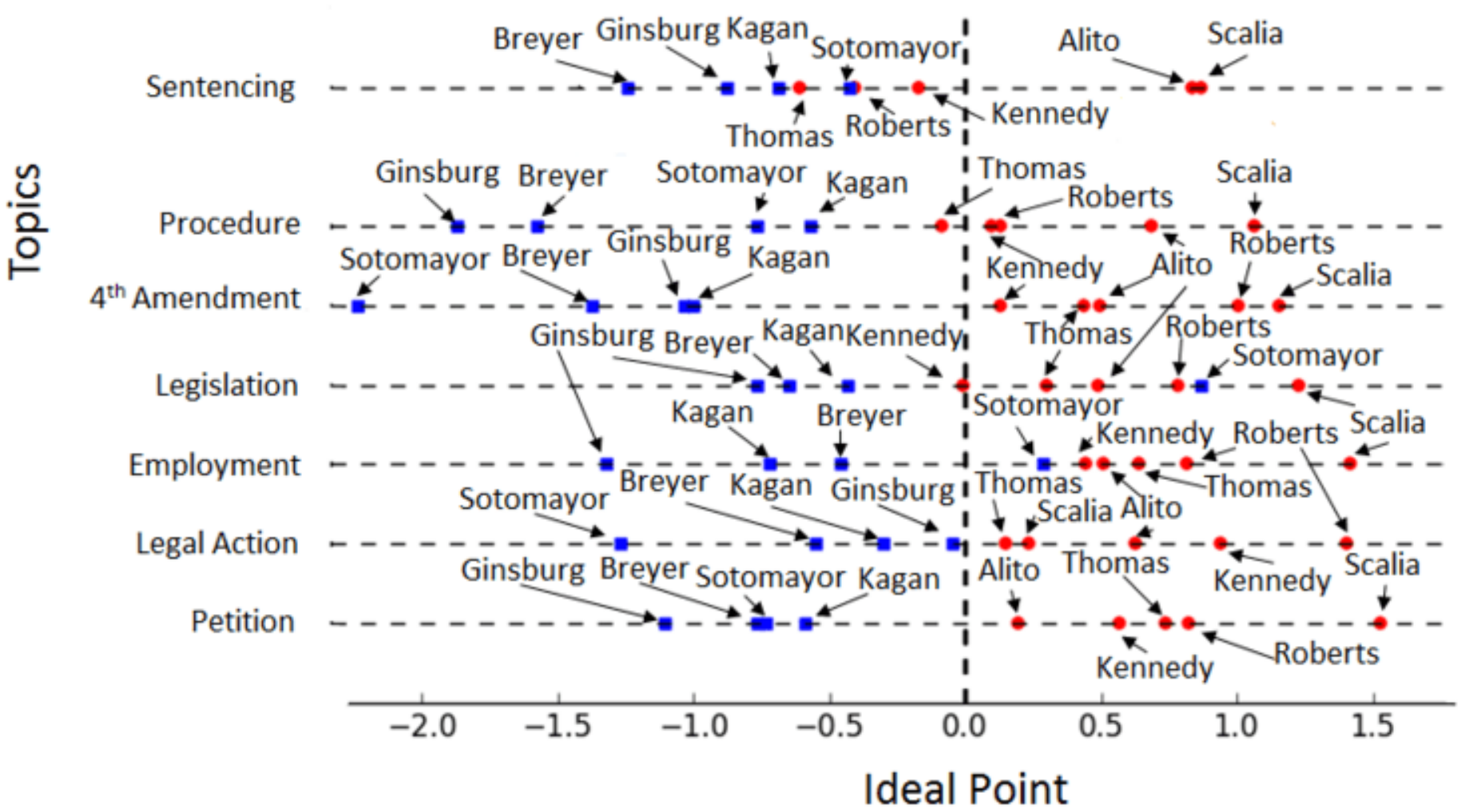
Background

- Process of deliberation
  - Initial stance
  - Hearing
  - Decision made during private meeting
  - Write opinions
- Old models pinpointed news converage, 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



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

AI/Machine Learning in the Model

Text-Based Analysis

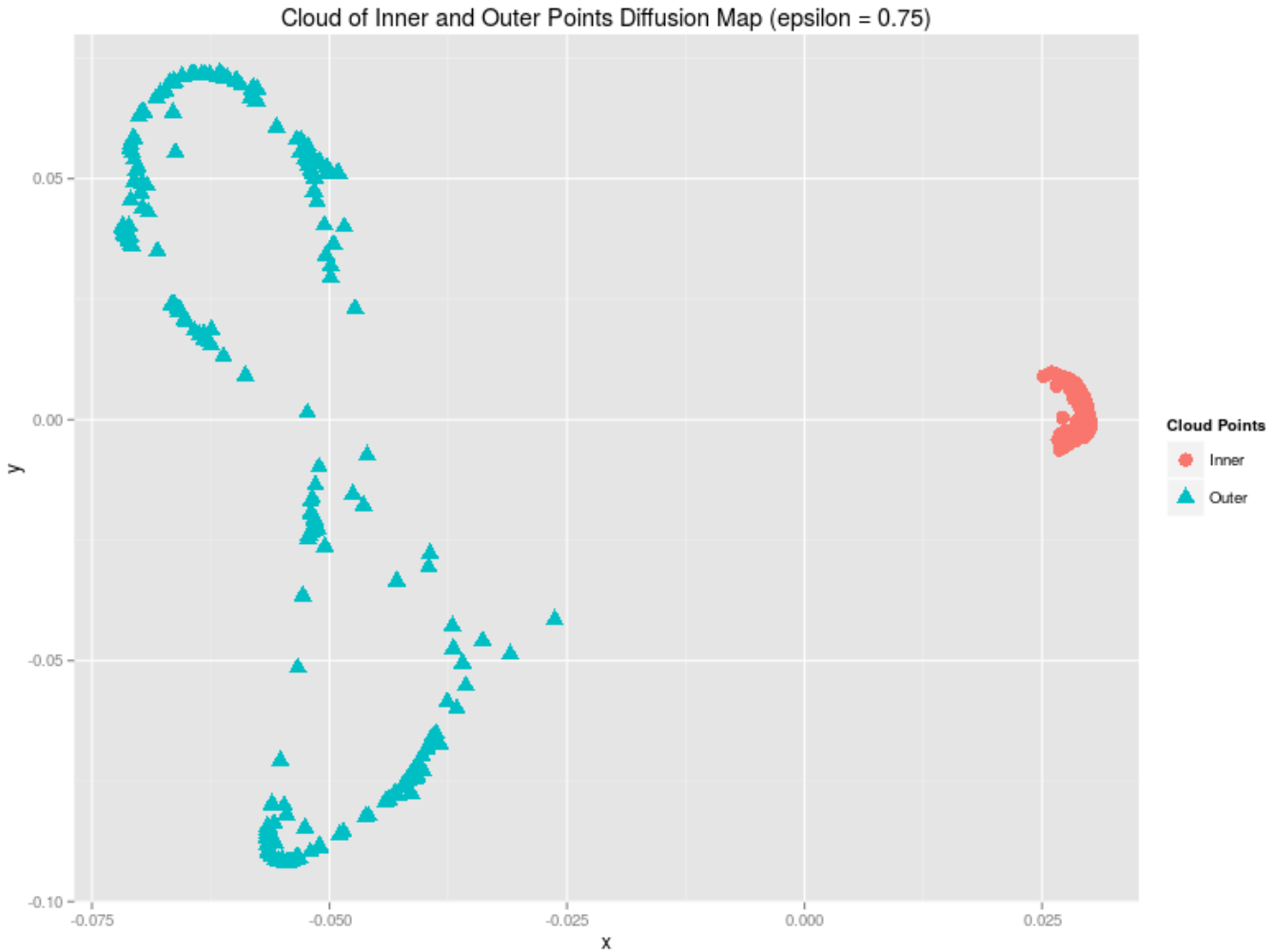
1. Two types: topic analysis and sentiment analysis
2. Model combined the two to use historical opinion text to "learn" and classify the decisions when reading new opinion text
3. The model looked at: number of words, identifies key words that pertain to each issue, assigns a weight to each issue
4. Classification problem

Classification Example

Before Classification

Classification Example

After Classification

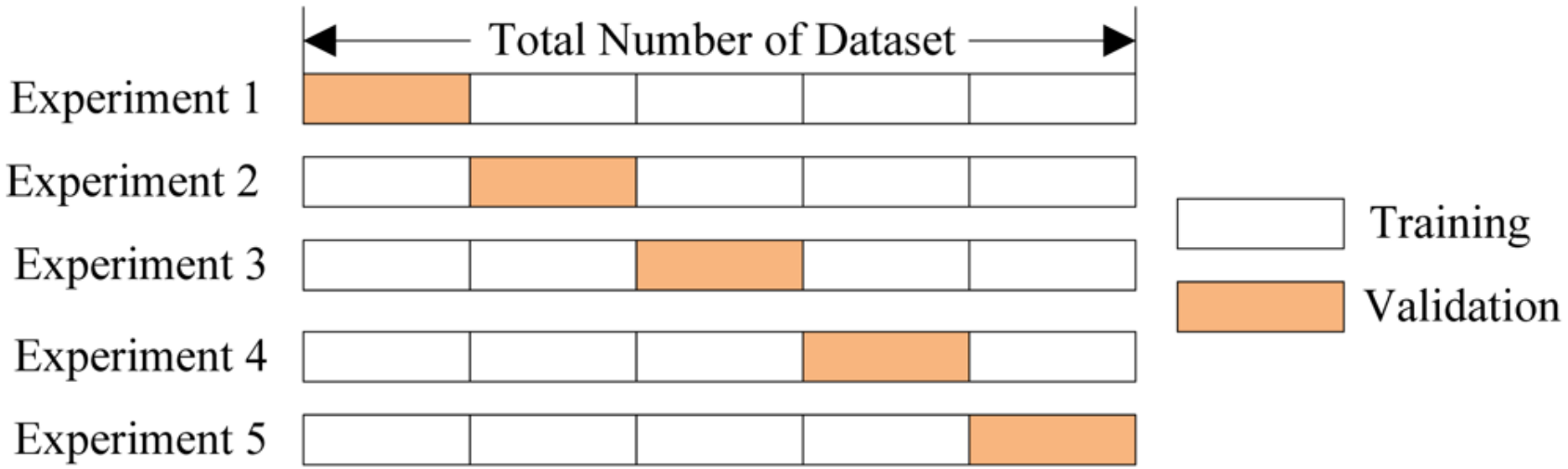


Cross Validation

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



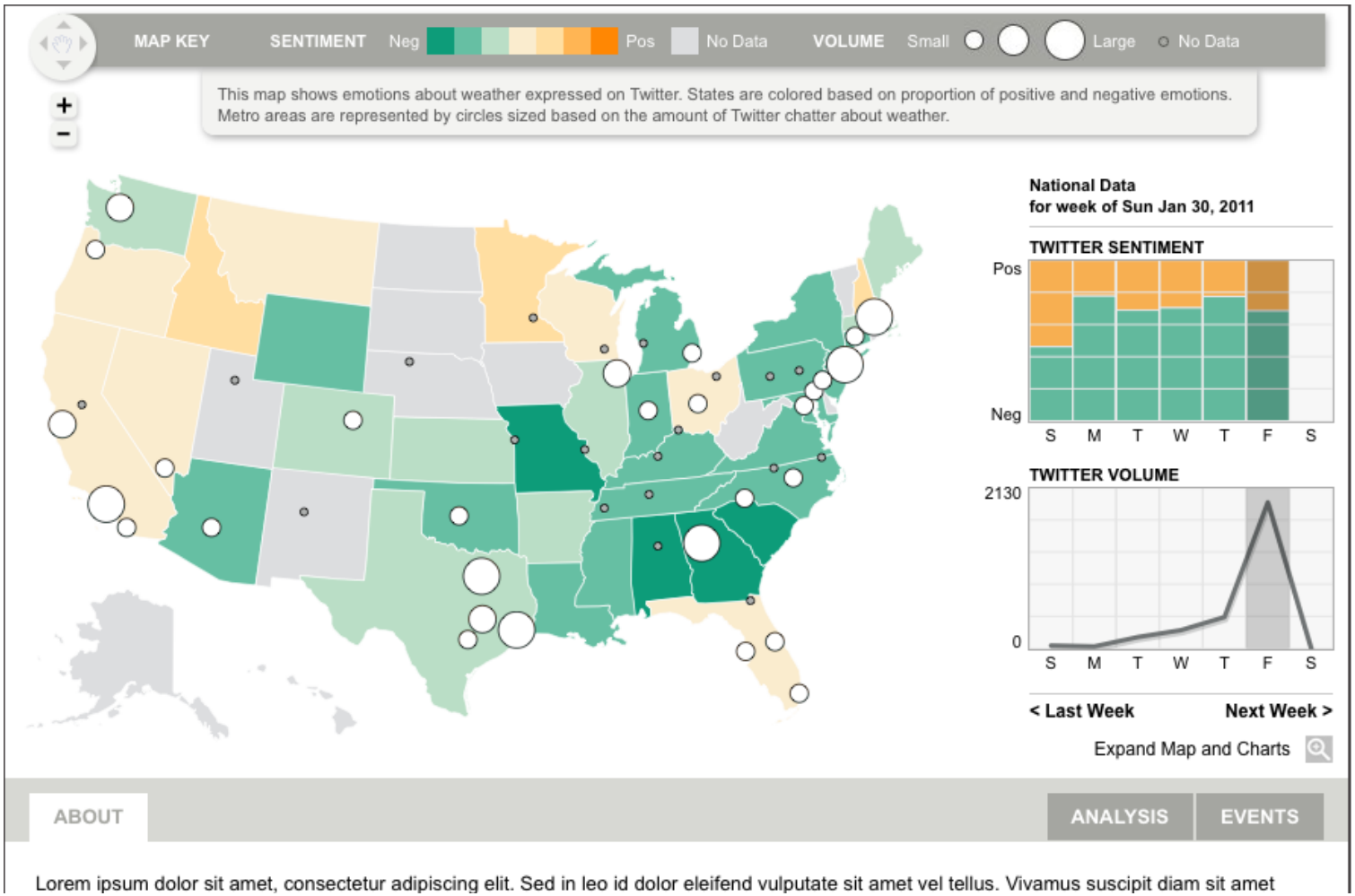
Future Considerations

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.



Conclusion

- 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

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