Identifying Presidential Threats and Threat Ambiguity: Using Machine Learning in International Relations

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- Need to have a comprehensive dataset on leader threats

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- What are the causes and consequences of ambiguous threats?

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- 70% of hand-coded data used for training and 30% for test

Creating the Corpus

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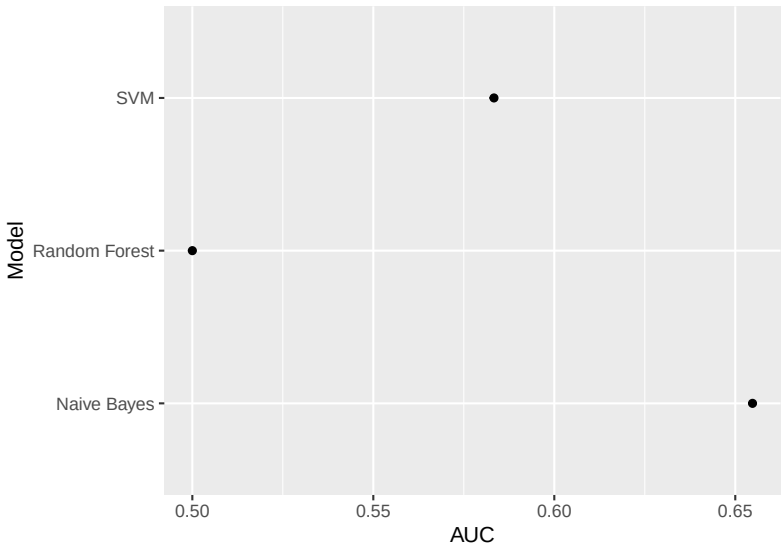
- Did not use stemming
- Omitted words that were used less than 15 times

Figure: Evaluating Out-of-Sample Performance of NB, RF, and SVM in Predicting Threats



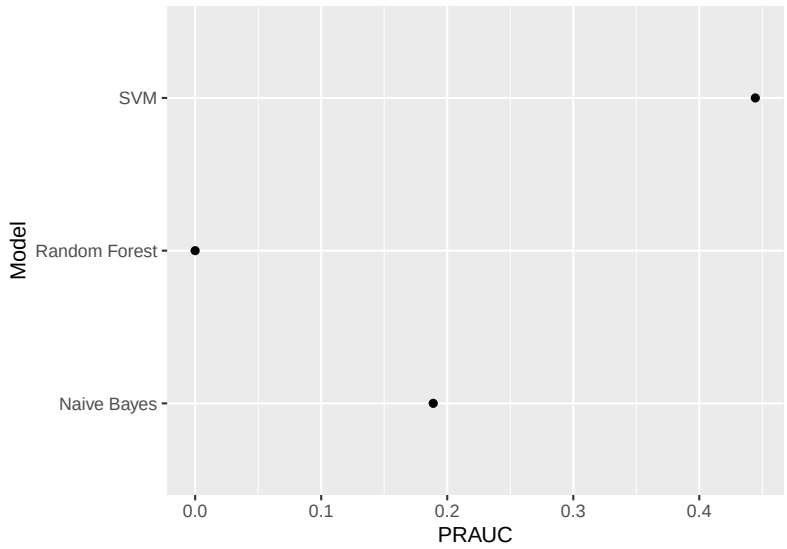
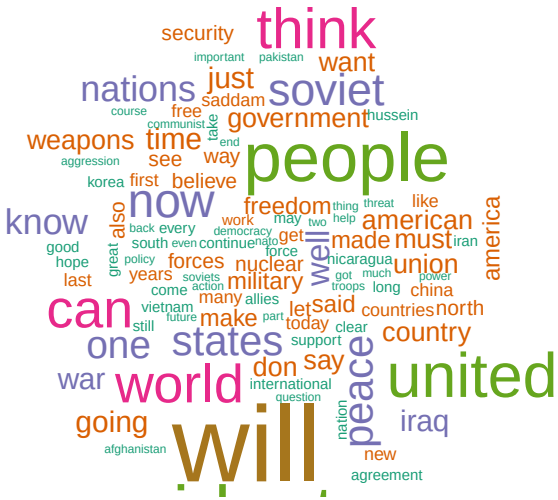


Table: Confusion Matrices of Predictions from Naive Bayes, Random Forests, and SVM

		NB		**RF**		**SVM**	
		0	1	0	1	0	1
Actual	0	82	2	84	0	84	0
	1	4	2	6	0	5	1
		Predicted					

- I used Naive Bayes to predict threats

Figure: Frequently Used Words in All Statements vs Statements that Contain Threats



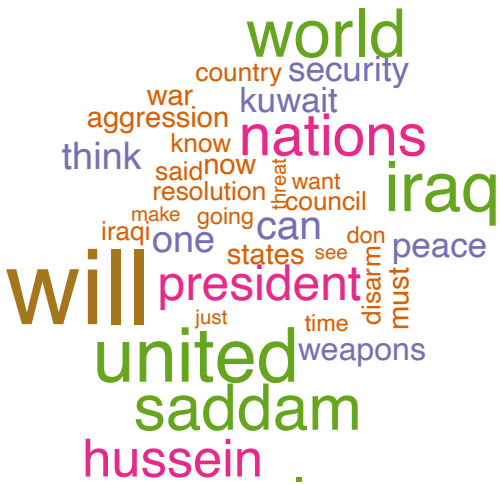
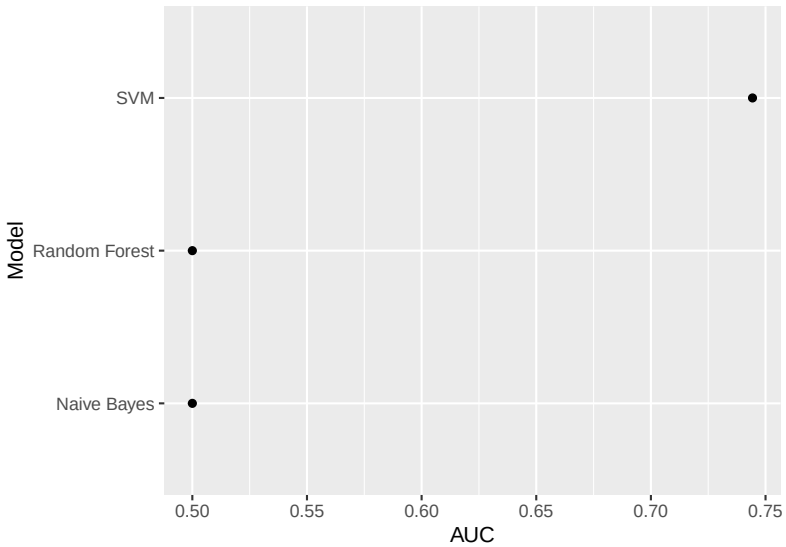
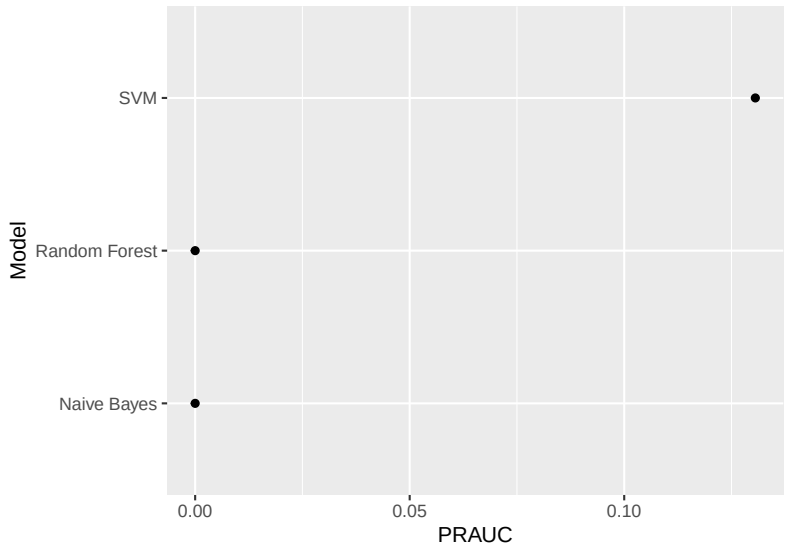


Figure: Evaluating Out-of-Sample Performance of NB, RF, and SVM in Predicting Ambiguity in Threats





Investigating Domestic Causes of Presidential Threats

- Unit of analysis: Month
- Monthly presidential approval rates
- Monthly unemployment
- Second term
- Campaigning
- New president
- Party affiliation
- Year
- All variables are lagged by one month
- Logit model with robust clustered errors by president

Table: Logit Estimates

	Presidential Threat
Approval $\%_{t-1}$	0.0226
	(0.0187)
$\text{Unemployment}_{t-1}$	-0.151
	(0.158)
Second Term_{t-1}	-1.920**
	(0.632)
$\text{Campaigning President}_{t-1}$	-1.837
	(1.389)
$\text{New President}_{t-1}$	-2.315
	(1.377)
Republican_{t-1}	0.383
	(0.491)
Year	0.0494**
	(0.0165)
Constant	-101.1**
	(32.68)
Observations	680

Standard errors clustered by president are in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Conclusions

- Need more hand-coded data
- Naive Bayes seems to be better than other alternatives, but its false positive rate is high
- Making accurate predictions about threat ambiguity seems to be hard

Thank you! Questions?