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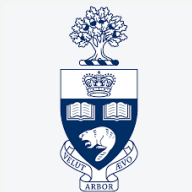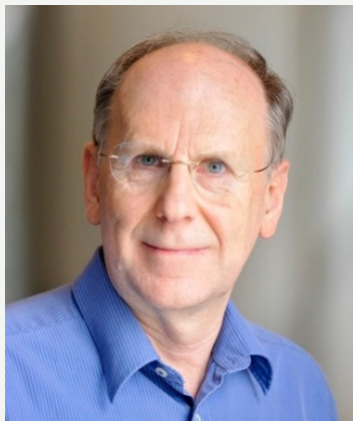
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Automatically Labeled Data Generation for Classification of Reputation Defence Strategies

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Reputation

- *Regard your good name as the richest jewel you can possibly be possessed of – for credit is like fire; when once you have kindled it you may easily preserve it, but if you once extinguish it, you will find it an arduous task to rekindle it again. The way to a good reputation is to endeavor to be what you desire to appear.*
–Socrates

Example

- **Reputation threat:**
  Cummings: *Without a doubt, the Vote Leave campaign owes a great deal of its success to the work of AggregateIQ. We couldn't have done it without them.*

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  Cummings: *Without a doubt, the Vote Leave campaign owes a great deal of its success to the work of AggregateIQ. We couldn't have done it without them.*

- **Reputation defence:**
  Silvester: *AIQ never worked or even communicated in any way with Cambridge Analytica or any other parties related to Cambridge Analytica with respect to the Brexit campaign. Any claim that we shared Vote Leave data with Cambridge Analytica or anyone else in any way is entirely false.*

2018-03-24, *Revealed: the ties that bound Vote Leave's data firm to controversial Cambridge Analytica*, The Guardian.

Reputation threat and defence in political speech

- **Q.** *While millions of Canadians are still waiting to be vaccinated, the Conservatives are wasting $45 million on signs that are completely useless. Will the Conservatives cancel their propaganda campaign and redirect those funds to help the provinces vaccinate Canadians as soon as possible?*

2009-11-04, Marcel Proulx, Lib. and John Baird, CPC.

Reputation threat and defence in political speech

- **Q.** *While millions of Canadians are still waiting to be vaccinated, the Conservatives are wasting $45 million on signs that are completely useless. Will the Conservatives cancel their propaganda campaign and redirect those funds to help the provinces vaccinate Canadians as soon as possible?*

- **A.** *Mr. Speaker, one of the hallmarks of the government has been transparency and accountability. That is why we think it is incredibly important, when we make investments in communities coast to coast to coast, that we inform Canadians of those investments. We have seen good co-operation. We have put aside politics when it comes to dealing with provinces and territorial governments. We put aside politics when dealing with municipalities. If we could only get the same thing from the Liberal Party, that would be quite the accomplishment.*

2009-11-04, Marcel Proulx, Lib. and John Baird, CPC.

Why detecting reputation defence strategies?

- Better understanding of real-life conflicts and arguments.

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- Better understanding of real-life conflicts and arguments.
- Analyzing participant behaviors at a large scale.
- And in this work, we want to find out:
  - Whether we can automatically label data with reputation defence strategies.

Benoit's reputation defence strategies

- Denial
- Excuse
- Justification
- Concession
- (Mortification)

William L Benoit. 1995. *Accounts, excuses, and apologies: A theory of image restoration strategies.* State University of New York Press.

Denial approaches

- Denying that the situation in question occurred.
- Denying causing the situation in question.

Denial Example

- **Q.** *Mr. Speaker, I think we should review the facts of the tainted virus scandal. First the Minister of National Defence said the vaccine was tested in Canada and was safe. Then yesterday he said no, it was tested by an independent U.S. firm. We already know that the manufacturer was shut down for quality control violations. We know because we have the documents. The Food and Drug Administration says that lot FAV020 was redated. Health Canada must have known this as well and granted DND permission to use the vaccine anyway.*

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- **A.** *Mr. Speaker, that is not true at all. The plant was not shut down. The plant was told that it had to make some improvements. There were some contaminated products that were totally removed but nothing that was contaminated ever got out or ever got used in terms of our Canadian forces. I never said it was tested in Canada. I said Canadian doctors and the Canadian military approved it as indeed did Health Canada. They fully had the information on the testing that was done in the laboratory and were satisfied that it was safe and effective for our troops.*

1999-02-04, Jim Hart, Ref. and Arthur C. Eggleton, Lib.

Excuse approaches

- The situation in question occurred in response to some other situations.
- The situation in question occurred because of lack of information or control over important factors.
- Some accidents caused the situation.
- The motives or intentions were good.

Excuse example

- **Q.** *Mr. Speaker, contrary to the Conservatives' claims, we are still short 30,000 jobs to get back to the level we were at before the crisis. For example, the Quebec forestry industry, which has lost 18,000 jobs since 2005, is struggling to get out of this difficult situation. Will the government understand that the crisis is far from over in the forestry industry and that it needs a comprehensive policy to support and modernize the industry, as was the case with the auto industry in Ontario?*

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- **A.** *Mr. Speaker, all of the forestry experts in the country agree that it is a matter of markets. Unfortunately, the only ones who do not get it are the members opposite. They are playing politics with these people's jobs. The markets are difficult. Our workers are among the best in the world and we will continue to support them. Billions of dollars have been put into improving green practices through the community adjustment fund, and we will continue to support the forestry industry with research and development.*

2011-02-01, Robert Bouchard, BQ. and Denis Lebel, CPC.

Justification approaches

- Trying to increase positive feeling (e.g., by mentioning positive actions performed in the past).
- Trying to convince the audience that the situation is not as bad they say.
- Trying to distinguish the situation in question from similar but less desirable situations.
- Trying to place the situation in a different or broader context.
- Attacking the opposition or questioning their credibility.
- Offering compensation for the situation.

Justification example

- **Q.** *Mr. Speaker, I hope Maurice Strong comes up with a plan in time. The government needs to admit and tell people what achieving these Kyoto targets will really mean in terms of higher electricity costs, heating costs, gasoline costs, and the destruction of many hundreds of thousands of jobs in Ontario and in Quebec. Will the minister come clean and tell Canadians what exactly the real economic costs will be by adhering to Kyoto?*

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- **A.** *Mr. Speaker, maybe one day the official opposition will understand that in the new industrial revolution we are in, the environment and the economy go together. Kyoto is not only necessary for the environment. It is a wonderful opportunity to strengthen the competitiveness of Canada.*

Concession approaches

- Promising to restore the situation.
- Promising to make changes (e.g., to prevent the recurrence of the situation).

Concession example

- **Q.** *Mr. Speaker, another industry in Quebec, the aerospace industry, is being threatened by Conservative policies. Even though Quebec represents 55% of the industry, it received only 40% of the spinoffs from the latest military contracts. All the other regions are receiving more than their share. Will the government get its head out of the sand and guarantee Quebec its fair share of the spinoffs of these contracts?*

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- **A.** *Mr. Speaker, obviously, this program, like any other military program and like the F-35s, generates spinoffs. The Canadian industry told me that this program was important because Quebec companies are expected to receive a number of contracts in the future.*

2011-02-01, Robert Bouchard, BQ. and Tony Clement, CPC.

Data

Canadian Parliamentary exchanges

- 493 pairs of questions and answers annotated with the most prominent strategy or *none* (173 justification, 170 denial, 95 concession, 36 excuse, and 19 as none of these strategies)
  - Various topics.
  - Average number of tokens of pairs is 171.
- 14,134 QA pairs from Oral Question period (1994–2014).

Data extracted from https://WWW.lipad.ca

Methods

Method

- Automatically assign reputation defence strategy to answers using two approaches:
  - Observed pairs of words.
  - Automatic pattern extraction.

Observed word pairs

- Extract all possible word pairs from the cross-product of the question and answer.
- Compute a correlation score using seed examples.
- Assign a score to each QA pair based on simple occurrences of word pairs.

Automatic pattern extraction

- Abstract away from topics and issues; divide words into frequent and infrequent according to:
  - Relative frequency in unlabeled corpus;
  - A threshold (1000 per million).
- Extract patterns from seed examples:
  - 5 to 7 words with only 3 to 5 slots for infrequent words.
- Assign a score to each QA pair according to exact matches of patterns.

Example patterns

- *Mr. Speaker, at no time have we interfered with the operations of Air Canada, and I stand by my answer of yesterday.*
- Example patterns:
    - *at no time have we* IFW *with*
    - *no time have we* IFW *with the*
    - *have we* IFW *with the*
    - *i* IFW *by my* IFW *of yesterday*

Evaluation

Evaluation of the automatically generated labels

- Comparison with human annotations.

Evaluation of the automatically generated labels

- Comparison with human annotations.
- Contribution to classification.

Comparison with human annotations

- 180 random QA pairs (66 *denial*, 5 *excuse*, 79 *justification*, and 30 *concession*).
- Annotations were performed by human annotators on CrowdFlower platform.
- Annotation task: whether the assigned strategy was correct or not.

Human annotations

- 45% of answers were agreed by five annotators.
- 121 answers were annotated with a confidence score above 80%.
- Most disagreements: answers that evaded providing response to given questions.

Example disagreement between annotators

Two annotators marked it as *concession* and three as *not concession*.

Does the answer express Concession?

- **Q.** *Mr. Speaker, my question is for the Minister of Labour. Former workers at Singer are arguing that the federal government did not fulfill its contract obligations toward them because it gave the company, instead of them, the Government Annuities Account surplus, that is a part of their pension funds that it was responsible for administering. Does the Minister of Labour not agree that the contract binding the parties between 1946 and 1957 is abundantly clear and that the federal government had an obligation to pay the surplus out to the workers and not to Singer?*

- **A.** *Mr. Speaker, all the federal regulations have been applied in this matter.*

1995-06-01, Claude Bachand (Q) and Lucienne Robillard (A).

Results – Agreement with human annotations

t is the threshold used for accepting the candidate label

All crowdsourced annotations
Observed word pairs

$t > .33$	$t > .32$	$t > .31$	$t > .30$
.60	.71	.73	.70

Extracted patterns

$t > .90$	$t > .80$	$t > .70$	–
.41	.43	.43	–

Crowdsourced annotations with confidence $> 80\%$
Observed word pairs

$t > .33$	$t > .32$	$t > .31$	$t > .30$
.80	**.85**	.77	.76

Extracted patterns

$t > .90$	$t > .80$	$t > .70$	–
.41	.39	.38	–

Contribution to classification

- Five-fold cross-validation.
- In each fold, 94 instances for test, and remaining for data extension.
- Extend training data using two approaches:
  - Once with observed word pairs.
  - Once with patterns.
- Reject candidate pairs using a threshold.

Features from answers

- Unigrams weighted with *tf-idf*.
- VerbNet classes (Schuler, 2005), 13 categories, such as *existence, communication, aspectual,* and *searching.*
- Sentiments.
- Negations.

Relations between questions and answers

- Discourse relations, including *Comparison*, *Contingency*, and *Expansion*.

- Cosine similarity measure (word2vec).

Framework

- Multi-class support vector machine
- Baseline:
  - Results on original annotated corpus

Results (word pairs)

Train	Original 379	t > .33 512	t > .32 1238	t > .31 3797	t > .30 8495
			BOW		
F_1	51.32	54.65	55.39	52.61	55.28
Accuracy	53.35	56.74	59.10	56.32	62.00
Denial	62.40	64.86	65.69	63.29	75.77
Excuse	13.60	17.00	13.64	13.64	3.64
Justification	55.60	62.42	66.39	63.50	67.14
Concession	36.40	32.00	25.00	14.32	11.02
		BOW+Negation+VerbNet+Similarity+Senti.+Disc.			
F_1	56.92	55.62	54.83	51.86	56.42
Accuracy	57.59	57.37	57.58	55.48	62.85
Denial	65.00	64.73	64.82	63.83	76.60
Excuse	18.00	17.00	17.27	17.00	6.60
Justification	59.80	62.30	64.75	63.05	67.50
Concession	48.00	37.74	24.30	13.01	10.80
			BOW+Negation+VerbNet		
F_1	53.22	54.77	56.01	53.05	55.29
Accuracy	54.22	56.11	58.84	56.74	62.01
Denial	63.60	64.73	65.60	63.45	75.95
Excuse	17.80	14.97	17.27	13.63	3.64
Justification	56.40	60.17	65.63	63.78	67.20
Concession	39.80	36.32	27.56	16.39	10.68

Results (patterns)

Train	Original	t > .90	t > .80	t > .70
	379	453	486	573
BOW				
F_1	51.32	48.52	47.63	47.51
Accuracy	53.35	49.99	49.15	48.94
Denial	62.40	56.94	54.73	57.54
Excuse	13.60	13.60	11.64	17.00
Justification	55.60	53.44	53.76	52.53
Concession	36.40	34.83	33.60	29.35
BOW+Negation+VerbNet+Similarity+Senti.+Disc.				
F_1	56.92	49.00	49.10	49.53
Accuracy	57.59	50.84	50.62	51.26
Denial	65.00	56.60	56.01	56.61
Excuse	18.00	13.60	9.40	12.53
Justification	59.80	54.00	54.15	54.65
Concession	48.00	38.60	39.73	40.17
BOW+Negation+VerbNet				
F_1	53.22	49.81	48.55	48.18
Accuracy	54.22	51.25	49.90	49.36
Denial	63.60	58.10	57.24	57.79
Excuse	17.80	18.10	18.10	27.42
Justification	56.40	54.32	53.30	51.66
Concession	39.80	36.94	34.58	30.89

Conclusion

- Observed word pairs approach resulted in a higher quality dataset.
- Extended dataset contributes positively to performance of the classifier.
- Dataset of parliamentary exchanges is a rich corpus for identifying the language of reputation defence strategies.