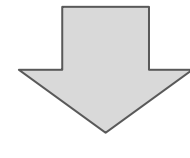# TMCIT at the NTCIR-14 QALab-PoliInfo Task

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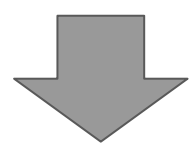
Motivation

In recent years, a lot of fake information exists on the Internet.
In particular, political fake information has a large impact on society.

It is necessary to **argue based on the evidence**
to avoid being misled.

Purpose

A system that presents information necessary for discussion.

Classify the assembly member speeches
that are the source of information.

Final Class \ Class	Relevance	Fact-checkability	Stance
Fact-checkable Agreement	relevant	possible	**agree**
Fact-checkable disagreement	relevant	possible	**disagree**
Other	irrelevant	impossible	**neutral**

Classification of Relevance by Cos similarity
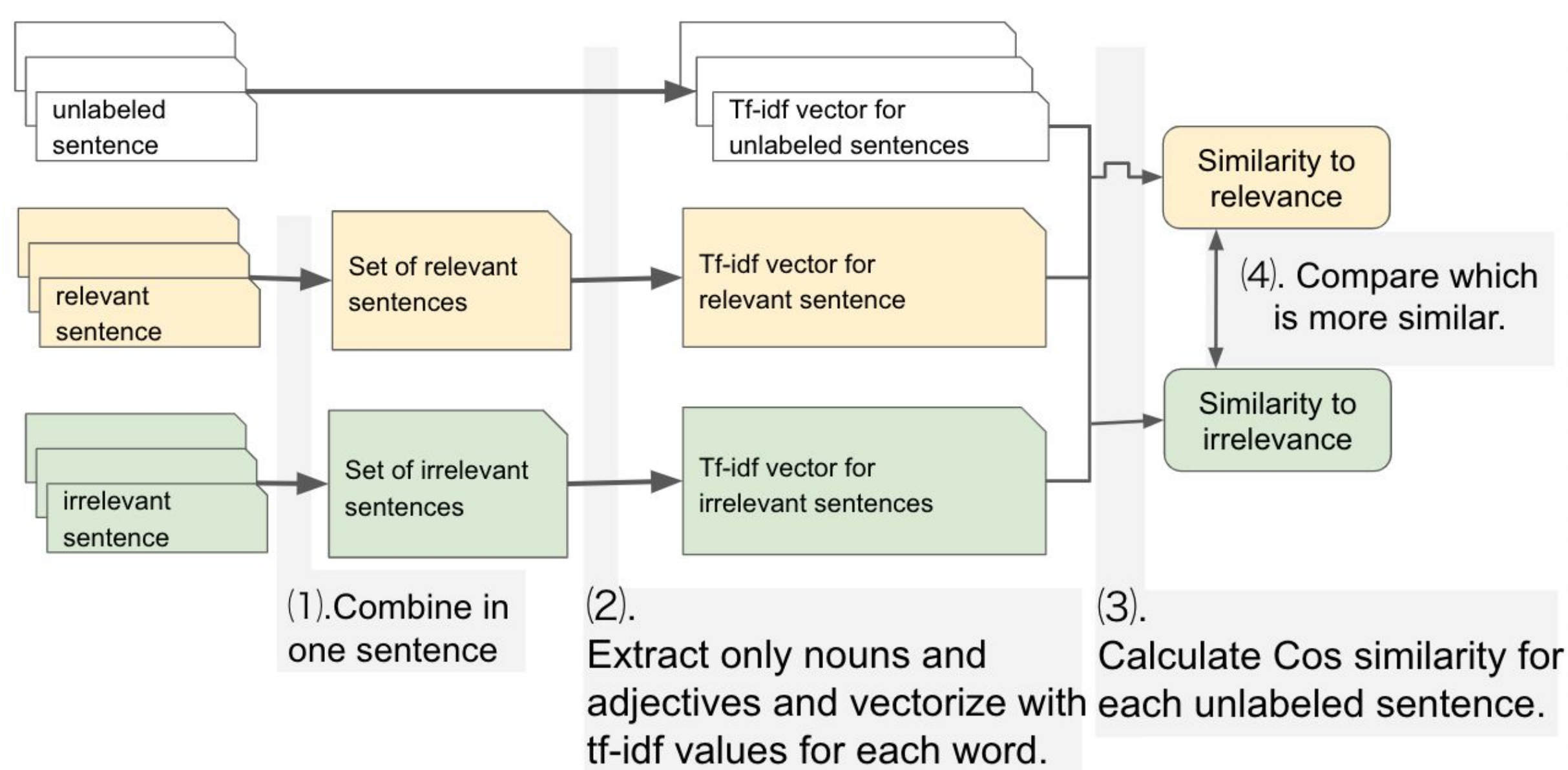
Classification of Fact-checkability by Decision tree

- Build a decision tree with manually labeled data.
- Use number of expressions as feature.
  - Evidence: "for"(ため), "so"(ので), "because"(から), "therefore"(したがって)
  - Numeral/Time/Money/Percentage: hundred, Heisei, yen, %, etc.
  - Named entity such as person's name/area/organization: Koike, Chinese, Jiminto, etc.
- Categorize test data by the tree as fact-checkable or not.

Classification of Stance by Support Vector Machine

- Use the emotional polarity value of the words of each sentence for the feature.
- Principal vector analysis reduces feature vectors to 150 dimensions.

		反対	危険	賛成	可決	利点	…
1. 私は反対(-0.88)です.	1	-0.88	0	0	0	0	…
2. 危険(-0.99)なので反対(-0.88)です.	2	-0.88	-0.99	0	0	0	…
3. 私は賛成(0.99)です.	3	0	0	0.99	0	0	…
4. 可決(0.46)してほしいです.	4	0	0	0	0.46	0	…
5. 利点(0.33)があり, 賛成(0.99)です.	5	0	0	0.99	0	0.33	…
…		…	…	…	…	…	…

Classification experiment results

	Acc [%]	Prec[%]			Rec[%]		
		0	1	2	0	1	2
Relevance	89	38	99	-	77	83	-
Fact-checkability	80	92	63	-	68	71	-
Stance	84	91	44	41	86	46	14
Final Class	93	99	17	15	93	35	6

Meaning of label
- Relevance
  - 0: irrelevant
  - 1: relevant
- Stance
  - 0: neutral
  - 1: agreement
  - 2: disagreement
- Fact-checkability
  - 0: impossible
  - 1: possible
- Final Class
  - 0: other
  - 1: Fact-checkable agreement
  - 2: Fact-checkable disagreement

Discussion

Classification of Relevance

- Label integration was made so that there was a lot of irrelevance.
- Low Kappa value for labels given by multiple people.
  - → **Decrease in precision rate.**
- Top 10 most important words for relevance.
  (Should promote integrated resorts including casinos.)
  - irrelevance: ten, hundred, **chairman**, two, six, eight, seven, **Daio Paper**, **illegality**, **10 billion yen**.
  - relevance: **Casino**, things, **ir**, **attract**, of, **bringing in**, to, **integrated resort**, country, **facility**.
    - →**tf-idf has successfully extracted high importance words.**

Classification of Fact-checkability

- Among the nodes of the constructed decision tree, observe the node that are the **number of samples ≧ 50** and **impurity(gini) ≦ 0.1**.
  - influential: Number of words representing **Numeral / Time / Money / Country / Place** and NER.
  - uninfluential: Number of expressions of **Evidence** / Percentage / Percentage name / **organization**.
- The reason why "the number of evidence expressions" is uninfluential.
  - Unable to properly extract evidence expressions.
    - Ex.: kind of "for"(in Japanese "ため").
      - Evidence expressions showing **cause** and **reason**.
      - Objective expressions showing **profit** or **goal**.
    - →**Need to define more complex extraction rules.**

Classification of Stance

- **Low accuracy** rate and **recall** rate for agreement and disagreement
  - The percentage of labels is, neutral : **agreement** : **disagreement** = 80 : **12** : **8**.
  - Feature is simple.
    - Polarity reversal or expression is not captured well.

  →Needs to incorporate the appropriate knowledge for the domain.

Conclusion

- we classified the utterances of assemblymen according to three viewpoints: Relevance, Fact-checkability and Stance.
- In the minority class of each classification experiment, the scores of precision and recall were low.
- Future work
  - Improve quality of use data.
  - More complex extraction rules and feature definitions.