

Modeling Factual Claims with Frames



The Innovative Database and Information Systems Research Laboratory (IDIR)

Fatma Arslan, Damian Jimenez, Josue Caraballo, Gensheng Zhang, Chengkai Li

Introduction

- * A growing interest in automating various factchecking steps.
- ✤ We introduce an extension of FrameNet (Baker et. al., 1998) for structured and semantic modeling of factual claims.
- With such modeling capability, we can capture various aspects of a factual claim; the domain and topic of the claim, the entities involved and their relationships, quantities, comparisons, aggregate structures, and so on.
- * This claim modeling capability is useful for a variety of steps for automating fact-checking,

Modeling Factual Claims



e.g., detecting factual claims, matching claims with fact-checks, translating claims to structured queries, and so on.

Defining New Frames

- * Collected fact-checked claims from PolitiFact¹,
- * Examined a subset of these claims one by one.
- * Grouped claims similar in nature.
- * Created new frames for each claim group if it doesn't already exist in FrameNet collection.
- 20 frames (13 newly created)
- ✤ 900 labelled factual claims.

Figure: *Vote* and *Occupy rank* frames from our frame collection along with their *LUs.* An exemplified sentence for *vote* and *rank Lus* with color-coded frame annotations below. Labels below each sentence are frame specific frame elements (*FEs*).

Oppose and Support Consistency Frame

Definition:

This frame is about an Agent's consistency of his/her Stance towards an sue. The Agent either alters or maintains his/her Stance. The



Stance may not be explicitly stated.

Preliminary Experiments: Claim Detection

- Task: Identifying factual claims to be fact-checked.
- * Utilized open-sesame² for frame identification.
- * Retrained it on FrameNet 1.7 dataset along with annotated sentences for three new frames .
- Labelled factual claims from "Share the Facts" dataset³ for 10 frames.
- * Evaluated open-sesame's performance for claim detection.

	Cause change of position on a scale (156)	Capability (48)	Causation (256)	Creating (114)	Change position on a scale (167)	Occupy rank (35)	Recurring action (29)	Taking sides (129)	Uniqueness of trait (33)	Vote (104)	avgw
P	0.73	0.32	0.41	0.92	0.45	0.82	0.23	0.52	0.54	0.61	0.56
R	0.60	0.79	0.48	0.31	0.74	0.69	0.66	0.46	0.88	0.94	0.60
<i>F</i> ₁	0.66	0.46	0.44	0.46	0.56	0.75	0.34	0.49	0.67	0.74	0.54

Table: Frame prediction performance, in terms of Precision (*P*), Recall (*R*) and F-measure (*F1*). Where *avg*_w denotes the weighted average of corresponding measure across ten frames.

Conclusions and Future Work

- * Uniqueness of trait and Vote frames performed in line with other preestablished frames.
- * Model's performance can be improved by feeding more training data.
- Developed a frame annotator tool to annotate more data for further experiments.

Funding:

This research has been partially supported by National Science Foundation grant #1719054 and a subaward from the Duke Tech & Check Cooperative (funded by The Knight Foundation, the Facebook Journalism Project and the Craig Newmark Foundation). Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the funding agencies.

noose File taking_sides_raw_file.txt Load File	Taking_sides	▼ Load Frame	Save
onaid Trump is for a single -payer health care system			
and Paul supports Obama 's negotiations with Iran			
strong majority of Americans support the Keystone XL pipeline			
ne 1956 Republican Party platform supported equal pay , the minim	um wage , asylum for refugees , protections for	unions and more	
/hile "Arkansas seniors depend on Social Security and Medicare , " <mark>Se</mark>	nator Mark Pryor supports an overhaul so they	/ "couldn 't get Social Security until they turn 68	3 or 69 "

articular iteratio

Concessi

(681,692) - frames/Taking_sides.xml



1. https://www.politifact.com 2. https://github.com/swabhs/open-sesame 3. http://www.sharethefacts.org/