

A Zero-Shot Claim Detection Framework using Question Answering



Revanth Gangi Reddy¹, Sai Chetan Chinthakindi¹, Yi Ren Fung¹, Kevin Small², Heng Ji¹

²Amazon Alexa Al ¹University of Illinois at Urbana-Champaign

Background and Motivation

- NewsClaims (Reddy et al 2021) extends the claim detection task to extract additional attributes relating to the claim, such as the claimer, claim object etc.
- The benchmark mainly contains claims about COVID-19 from 143 news articles.

News Article	Claim Detection	n	Claim Span	Vitamin C Protects
he claim originated in a Jan. 26, 2020 press elease titled "Vitamin C Protects Against	Claim Sentence 1 The claim originated in a Jan.	Topic:	Detection	Against Coronaviru
oronavirus," from the International Society for rthomolecular Medicine, which promotes rge doses of nutritional supplements. The	26, 2020 press release titled "Vitamin C Protects Against Coronavirus,", from the	Protection from the virus	Stance Detection	Affirm
rticle was then republished in full the next day n HealthImpactNews.com, a Red-rated	Claim Sentence 2 From the WHO, there has	Topic	Claim Object	Vitamin C

Claim Topic Filtering and Claim Object Detection

Claim Topic Filtering

- Topic filtering by measuring topic relevance as the answer confidence from a QA model.
- Input to the QA model comprises of the claim sentence passed as context along with the question corresponding to the individual topic.
- Claims are filtered based the highest topic score using a threshold.

Context : There is no evidence that eating garlic prevents you from being infected with the coronavirus

network of health sites. From the WHO, there has been no information nor evidence to that the new coronavirus could by transmitted by mosquitoes.

been no information nor Transmitting evidence to suggest that the the virus new coronavirus could by transmitted by mosquitoes

Detection

International Society Claimer for Orthomolecular Detection Medicine

Figure 1: An example from NewsClaims.

- Claim detection approaches need to be able to ported to new scenarios, without access to much training data.
- Further, the claimer detection subtask within NewsClaims requires considerable document-level reasoning, making it harder for existing attribution models which mainly involve sentence-level reasoning.
- We hypothesize that identifying claim topics and extracting corresponding claim attributes can be formulated as a Question Answering (QA) task.

QA-based Claim Detection Framework

- ► The same extractive QA model solves multiple sub-tasks within claim detection, without the need of any task-specific training data.
- ► This involves:
 - Filtering claims relating to specific topics
 - Identifying claim objects associated with such topics



	Question 1 (protection) : what can protect from the virus?	
	Question 2 (origin) : What is the origin of the virus?	
	Question 3 (cure) : What can cure the virus?	
,	<i>Question 4 (transmission)</i> : What can transmit the virus?	`,

Claim Object Detection

Step 1

- Claim object detection involves identifying what is being claimed in the claim sentence with respect to the topic.
- The answer span from the QA model for the question corresponding to the claim topic is used as the claim object.

Approach	Model	Туре	F1
Prompting	GPT-3	Zero-shot	15.2
Prompting	T5	Zero-shot	11.4
In-context learning	GPT-3	Few-Shot	51.9
Prompt-based fine-tuning	T5	Few-Shot	51.6
QA	BERT	Zero-shot	57.0

Table 2: F1 score for claim object detection.

Claimer Detection

What is being

claimed?

Claim Sentence

The articles that saw the biggest

engagement numbers all claimed

that the virus was manufactured by

ClaimBuster	13.0	86.5	22.6
ClaimBuster + NLI	21.8	53.3	30.9
ClaimBuster + QA	30.7	43.4	36.0
Table 1: Performance for detecting			
claims about COVIE	D-19.		

_ R | F1

Model

Attribution for identifying the claimers making these claims







Figure 2: Proposed QA-based claim detection framework.

have attribution. Thus, they can be identified from just sentence-level information.

the treatment of COVID-19.	Journalist
Inhaling bleach fumes is dangerous and	lournalist
will not kill viruses that are already inside.	oournalist

Claim Span

Extraction

manufactured by

the virus was