Claim Verification using Semantic Lexical Resources
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Classify textual claims as Supported, Refuted or NotEnoughInfo using evidence retrieved from Wikipedia

Frame-based Evidence Retrieval
Frame-matching was used to identify and retrieve sentences that provide evidence relevant to the claim, where a frame is a semantic schema describing a situation, event or relations and its participants.

| Claim: Maximum Overdrive is only a 1980 romance film |
| (Frames: Temporal_Pattern, Origin, Behind_the_sence, Personal_Relationship) |

Semantically Similar
E1 – Maximum Overdrive is 1986 American science fiction horror dark comedy film written and directed by Stephen King
(Frames: Temporal_Pattern, Origin, Behind_the_sence)
E2 – In 1988, Maximum Overdrive was nominated for “Best Film” at the International Fantasy Film Awards.
(Frames: Temporal_Pattern, Behind_the_sence)

Semantically Dissimilar
E3 – He considers the process a learning experience, after which he intended never to direct again.
(Frames: Education_Teaching, Memorization)

We used our KB of FrameNet annotations of Wikipedia article sentences (Ferraro et al., Concretely Annotated Corpora, AKBC Workshop, NIPS, 2014)

Performance on development dataset on difference settings; better evidence retrieval enables good classification performance with a simple classifier model

<table>
<thead>
<tr>
<th>Who</th>
<th>Classifier</th>
<th>Training Type</th>
<th>Classifier</th>
<th>Predicting Evidence</th>
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<tbody>
<tr>
<td>UMBC-1</td>
<td>MLP</td>
<td>(Entire Doc.) Frame Match</td>
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<td>MLP</td>
<td>Throne et al. 2018 Table 4</td>
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<td>Baseline-2</td>
<td>DA</td>
<td>CodaLab Results</td>
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<td>0.5137</td>
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</tbody>
</table>

Claim: Last Man Standing does not star Tim Allen
Predicted evidence:
1. Timothy Allen Dick (born June 13, 1953), known professionally as Tim Allen, is an American actor, comedian and author.
2. He is known for his role as Tim “The Toolman” Taylor in the ABC television show Home Improvement (1991) as well as for his starring roles in several films, including the role of Buzz Lightyear in the Toy Story franchise.
3. From 2010 to 2017, he starred as Mike Baxter in the TV series Last Man Standing

Predicted Label: REFUTED (due to evidence (3)) ; Gold standard Label: REFUTED

Claim: Rocky Mountain High is an Australian Song
Predicted evidence (Correct):
1. “Rocky Mountain High” is a folk rock song written by John Denver and Mike Taylor about Colorado, and is one of the two official state songs of Colorado
2. The song also made #3 on the Easy Listening chart, and was played by some country music stations
3. Denver told concert audiences in the mid-1970s that the song took him an unusually long nine months to write
4. Members of the Western Writers of America chose it as one of the Top 100 Western songs of all time

Predicted Label: SUPPORTED ; Gold standard Label: REFUTED

Relevant evidence correctly retrieved, but misclassified as supporting the claim

Error analysis examples of predicting evidence & classification. Frame-based retrieval returns high-quality evidence sentences, but performance is reduced by accuracy of classifier and automatic frame annotator

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