Detecting False Claims in Low-Resource Regions: A Case Study of Caribbean Islands

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Introduction

- Focuses on the COVID-19 related false claims in the Caribbean islands
- ML models trained in high-resource language corpus are not easily transferable to low-resource language settings
- Scarcity of English fact-checking data exacerbates the problem
- Datasets: (1) US-English CoAID Corpus (2) Curated Caribbean Claims.

Research Questions

- RQ1: How do ML models trained in high-resource languages perform with current Caribbean false claims?
- RQ2: Are more sophisticated ML techniques (e.g., Transfer Learning), useful to detect false claims in the Caribbean?

Framework

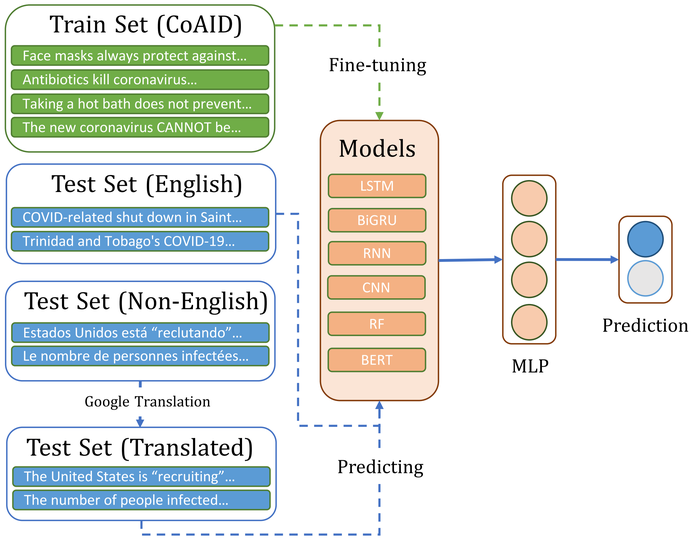

Figure 1. For RQ1, we train the models on CoAID dataset and test on English Caribbean dataset and Translated English Caribbean dataset. For RQ2, we fine-tune the BERT model with CoAID dataset, English Caribbean dataset, and Translated English Caribbean dataset

Experiment

RQ1: We established 3 Tasks (I-III) to assess CoAID Models

- Task I: Get baseline performance using CoAID dataset
- Task II: Assess CoAID baseline models on Caribbean-English claims
- Task III: Assess CoAID baseline models on Caribbean-English claims translated from Spanish and French

RQ2: We established 2 Tasks (IV-V) to Assess Transfer Learning

- Task IV: Assess fine-tuned BERT transformer model on Caribbean-English
- Task V: Assess fine-tuned BERT transformer model on Caribbean-English claims translated from Spanish and French

Results: RQ1

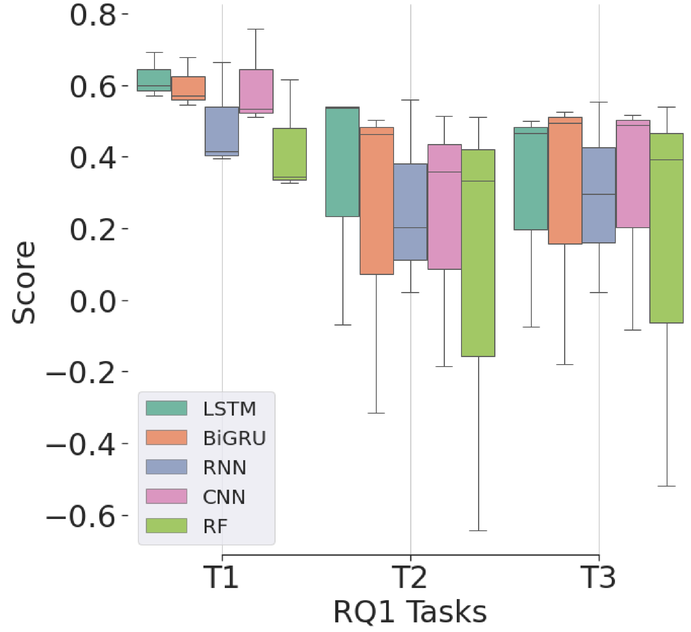

Figure 2. Overview of RQ1 ML models' performance from Tasks I to III. The box plot shows a decline in CoAID ML models' performance on Caribbean data.

Results: RQ2

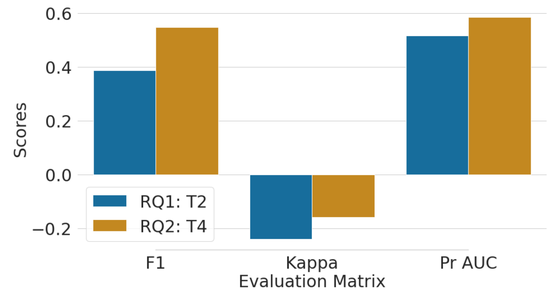

Figure 3. This bar chart compares the performance of CoAID RQ1: Task II models performance with RQ2: Task IV fine-tuned BERT transformer model. This graph shows that transfer learning achieves better performance.

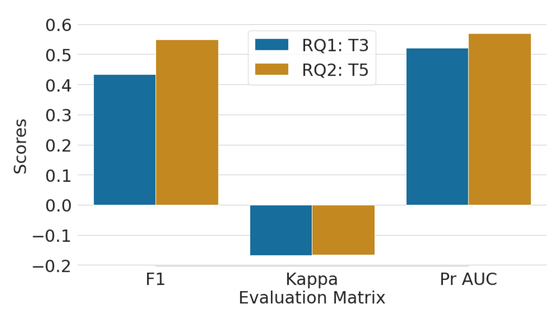

Figure 4. This bar chat compares the performance of CoAID RQ1: Task III models with RQ2: Task V fine-tuned BERT transformer model. This graph shows that transfer learning via BERT achieves better performance.

Findings and Suggestions

1. High-resource detection models underperform on Caribbean data
2. Experiments with transfer learning shows improvements
3. Future work can explore meta-transfer learning, data augmentation and mBERT transformer model
4. Indigenous Caribbean data barriers complicate false claims detection

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