

Karla Schäfer

Touché: Intra-Multilingual Multi-Target Stance Classification using BERT

Task

- **Develop stance classifier**, using a multilingual, multi-target, and multi-topic dataset
- One example:

Proposal: Creating a migration system that reflects European values:

We have signed the UN charta on human rights. We even have an own charta on human rights. Yet we consciously collaborate with the Lybian regime, with dictators and warlords all just to prevent people from coming to Europe. And I am ashamed as a European citizen we do this. [...]



In favor

Comment: Finally somebody who knows on which values the EU is based upon. I agree with everything, especially the part about making legal migration easier (which automatically damages human traffickers).

Dataset

- CoFE dataset [1] – created from a „Online European Participatory Democracy Platform“
- Topics: Democracy, GreenDeal, ValuesRights, Migration etc.
- Proposals (combined: title + text): **native + English**; Comments: **native**
- One entry: **proposal + comment + label**

Table 1
Overview of the Datasets.

| Feature | Dataset Subtask 1 (CF_EDevS dataset) | | | Dataset Subtask 2 | | |
|------------------|--------------------------------------|------|----------|-------------------|-------|----------|
| | CF_S | CF_U | CF_E-Dev | CF_S | CF_U | CF_E-Dev |
| entries | 4145 | 5785 | 901 | 7002 | 13213 | 1414 |
| number labels | 2 | 0 | 3 | 2 | 0 | 3 |
| label (in favor) | 3214 | - | 496 | 5440 | - | 753 |
| label (against) | 931 | - | 64 | 1562 | - | 118 |
| label (others) | - | - | 341 | - | - | 543 |

[1] CoFE Dataset <https://aclanthology.org/2022.aacl-short.52/>

Dataset

- CoFE dataset – created from a „Online European Participatory Democracy Platform“
- One entry: proposal + comment + label; **total: 5.046 entries**

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Used for self-training

Approach Overview

- Self-training using pre-trained BERT

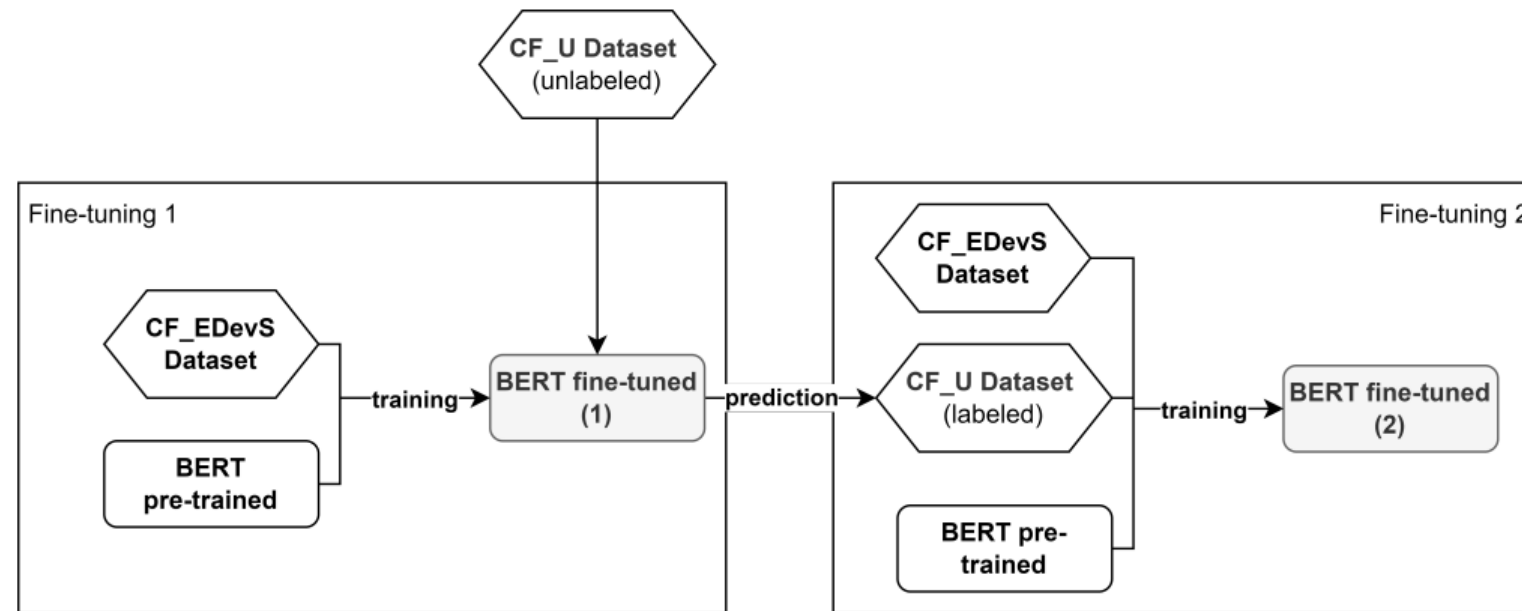


Figure 1: Overview of the approach, divided into Fine-tuning 1 and 2 (self-training).

Results

With/Without self-training

- **Experiments conducted:**

- Language: native/english (translation: GoogleTranslator)
- Truncation: end, first, **longest**
- Model: BERT with linear layer

- **Self-training:**

- stopped at a **threshold of 90% (prediction probability)**
- avoid adding too many weak labels to the training dataset

- **Performance increase of +0.08**

Table 3

Results for the whole process (Fine-tuning 1+2).

| No. | language (dataset) | learning rate | epochs | threshold CF_U | count CF_U used | macro-averaged F1 score |
|-----|--------------------|---------------|--------|----------------|-----------------|-------------------------|
| 1 | english | 2e-5 | 1 | - | - | 0.7604 |
| 2 | english | 3e-5 | 1 | - | - | 0.7604 |
| 3 | english | 5e-5 | 4 | - | - | 0.7663 |
| 4 | native | 5e-5 | 2 | - | - | 0.7842 |
| 5 | native | 2e-5 | 2 | - | - | 0.8079 |
| 6 | native | 2e-5 | 2 | >0.9 | 3 304 entries | 0.8862 |
| 7 | native | 2e-5 | 2 | >0.93 | 2 955 entries | 0.8402 |
| 8 | native | 2e-5 | 2 | >0.99 | 746 entries | 0.7897 |

Fine-tuning only
Self-training

Results

Challenge

- **Parameters used:**

- Language: native
- learning rate: 2e-5
- epochs:2
- threshold for the dataset CF_U > 0.9

Table 4

Results in the CLEF 2023 Touché Lab Task 4 Challenge.

| Team | Run timestamp | all-accuracy | all-macro f1-score | all-micro f1-score |
|---|---------------------|--------------|--------------------|--------------------|
| touche23-queen-of-swords (Subtask 1) | 2023-05-19-07-51-03 | 0.605 | 0.417 | 0.605 |
| touche23-queen-of-swords (Subtask 2) | 2023-05-19-07-51-35 | 0.616 | 0.324 | 0.616 |
| touche23-baseline | 2023-04-09-12-20-42 | 0.552 | 0.237 | 0.552 |

- **Results rather poor**
- **Same proposals were used for training and testing -> performance decrease in challenge (new proposals)**

>> **Watch your data!!!**

Thank you for your attention

Kontakt

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