

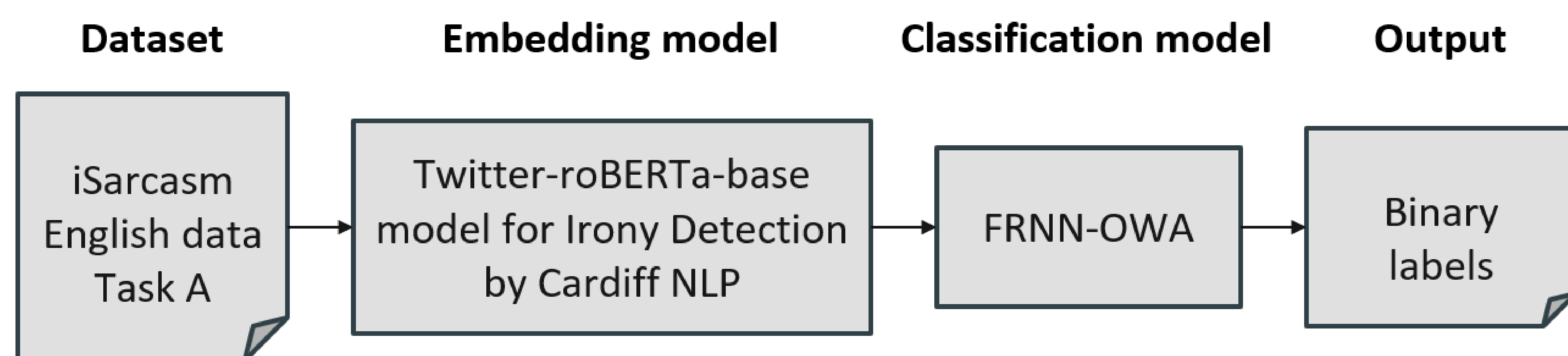
Introduction

- The **sarcasm detection** is a challenge in the Natural Language Processing, however, even for a human it could be an issue.
- SemEval-2022 Task 6 **iSarcasmEval subtask A** is a sarcasm detection binary classification task, where we considered English tweets.

id	tweet	sarcastic
0	The only thing I got from college is a caffeine addiction	1

Picture 1. A sample of instance from Subtask A

- Our solution is **Fuzzy-Rough Nearest Neighbor** (FRNN) classification model with **Ordered Weighted Average** (OWA) operators.
- Our best setup uses raw text embedded in vectors by **Twitter-roBERTa-based** model tuned for Irony Detection by CardiffNLP group.



Picture 2. Our final solution

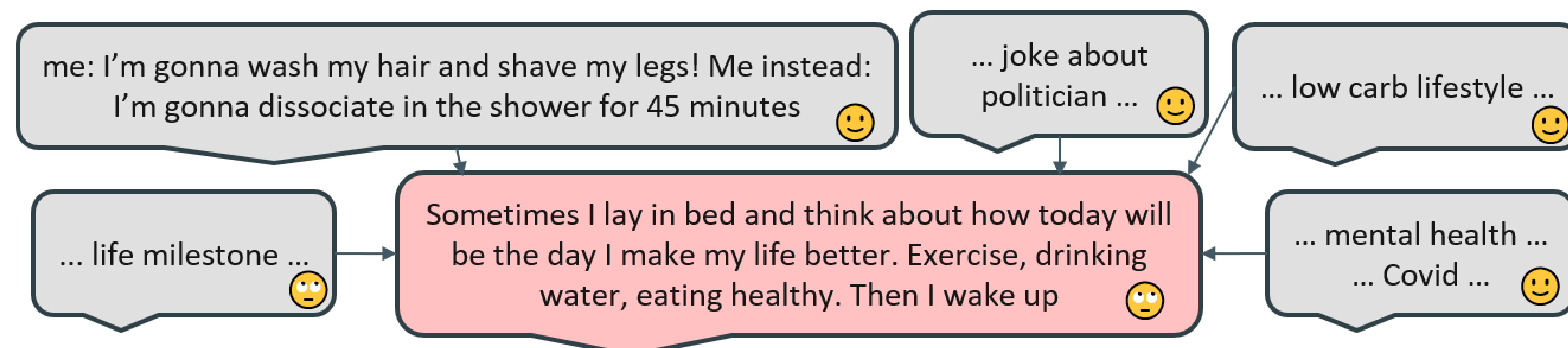
- The **motivation** to use FRNN is to investigate the potential and explainability of **simple method** compared with the black-boxes.
- The presented solution is **based on** the method from **our previous paper** that showed promising results for the emotion detection. Hence, we aimed to test it on the sarcasm recognition task.

Experiments

- We examined all combinations of **3 text preprocessing** techniques and **6 text embedding** approaches to chose the best combination and tuned **number of neighbors k** for the each FRNN model.
- As a similarity function for the FRNN, we used **cosine**, for evaluation we used **5-fold cross-validation** and **F1-score**, and we also tried a models' **ensemble** based on various embeddings.
- The **best setup** has no text preprocessing, roBERTa-based embedding technique for vectors extraction, and FRNN-OWA model with k = 5.

Error analysis

- We **traced back test tweets** to see 5 train instances that formed its class.



Picture 3. Example of the incorrectly classified test tweet

Results

- We obtained F1=0.3722 for train data and **F1=0.4242** for the test data.
- Our solution achieved **9th place** on the competition leaderboard.
- This approach can give us more **explainability** about obtained results.

#	User	F-1 sarcastic	F-score	Precision	Recall	Accuracy
9	Olha_Kaminska	0.4242 (9)	0.6552 (7)	0.6422 (7)	0.6767 (11)	0.8100 (8)

Picture 4. Our place in the subtask A English leaderboard