

# UE and **Nikon** at the NTCIR-13 MedWeb Task



Nga Tran Anh Hang<sup>1</sup>, Hiroko Kobayashi<sup>2</sup>, Yu Sawai<sup>3</sup>, Paulo Quaresma<sup>1</sup>

1: University of Evora, 2: Nikon Corp., Japan, 3: Nikon Systems Inc., Japan

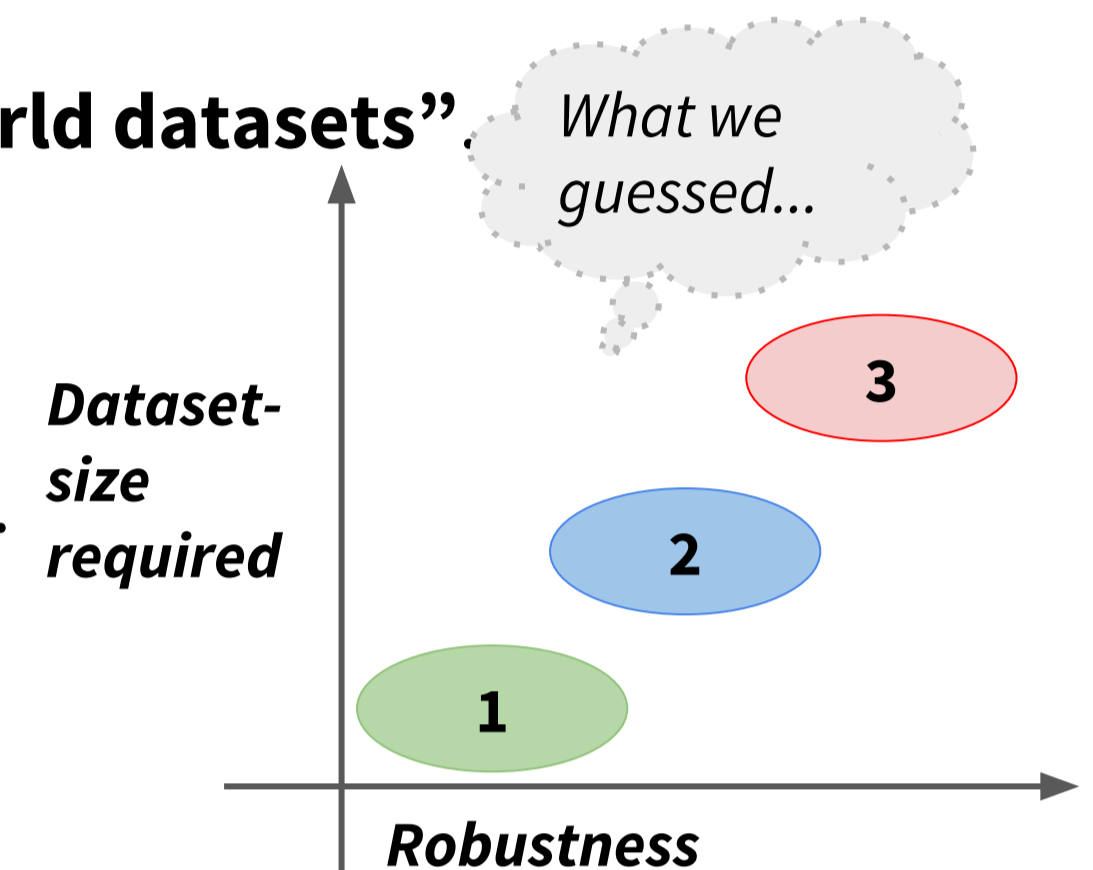


## Summary

- We compared three approaches: rules, random-forests, distributed-similarity for detecting “signs” of disease/symptoms on Japanese and English pseudo Twitter data.
- Feature engineering method** achieved highest exact-match and F1 score among our approaches.
- Through error-analysis, we found that...
  - dataset-size is crucial (of course!),
  - discourse-feature is needed,
  - ontology will be a help.

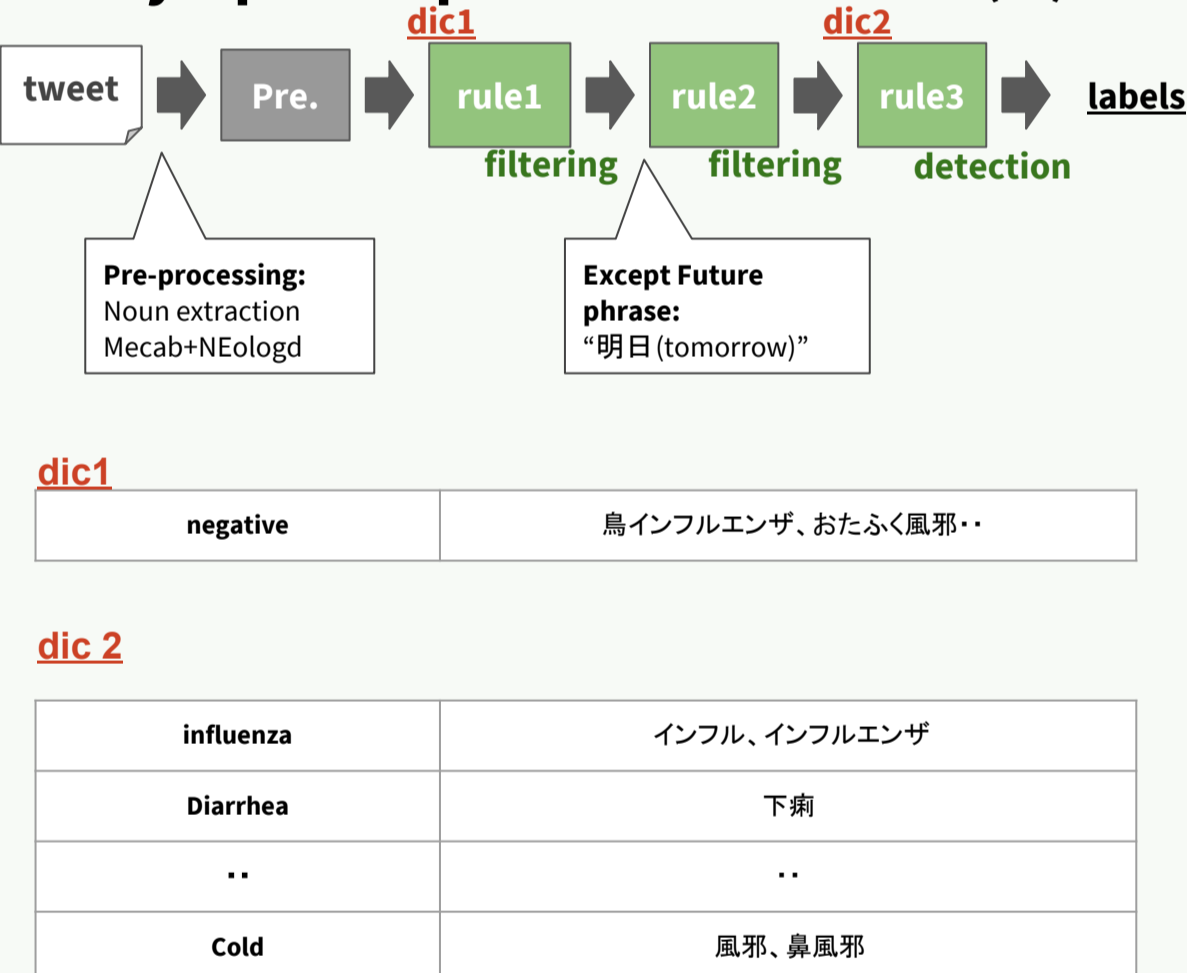
## Introduction & Motivation

- Current NLP research is focusing on rather “**clean**” language data.
- We want to know strength and weakness of popular methods on “**real-world datasets**”
  - 1. Rule based**
    - Fast and explicit, but poor generalization, and costly to maintain.
  - 2. Feature engineering**
    - Explicitly handles linguistic features, but not robust for parsing errors.
  - 3. Distributed representations**
    - No need of sophisticated parsing, but needs a lot of data.
- Challenges: pre-processing for tweets, neologisms, discourse structures

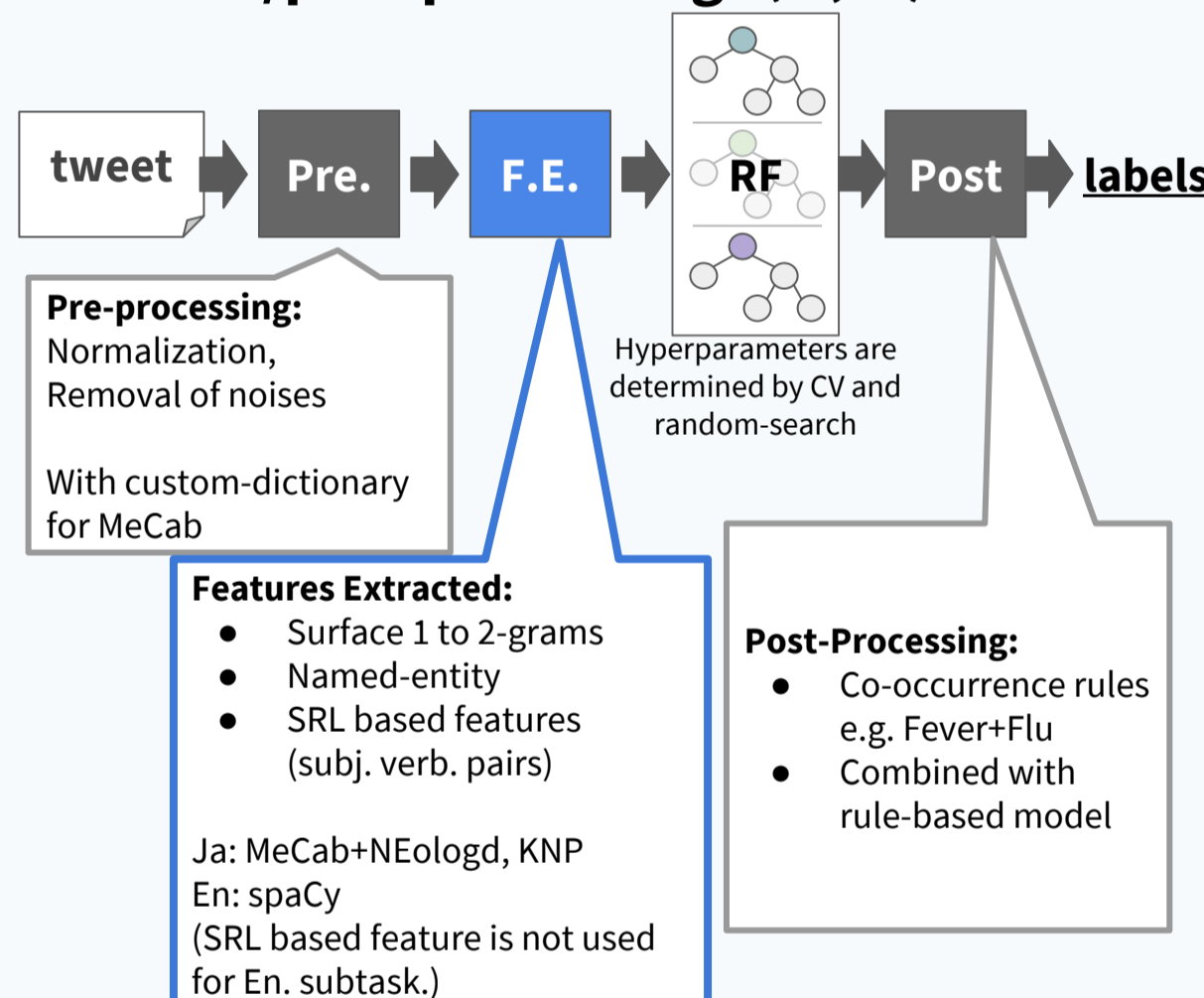


## Our Approaches

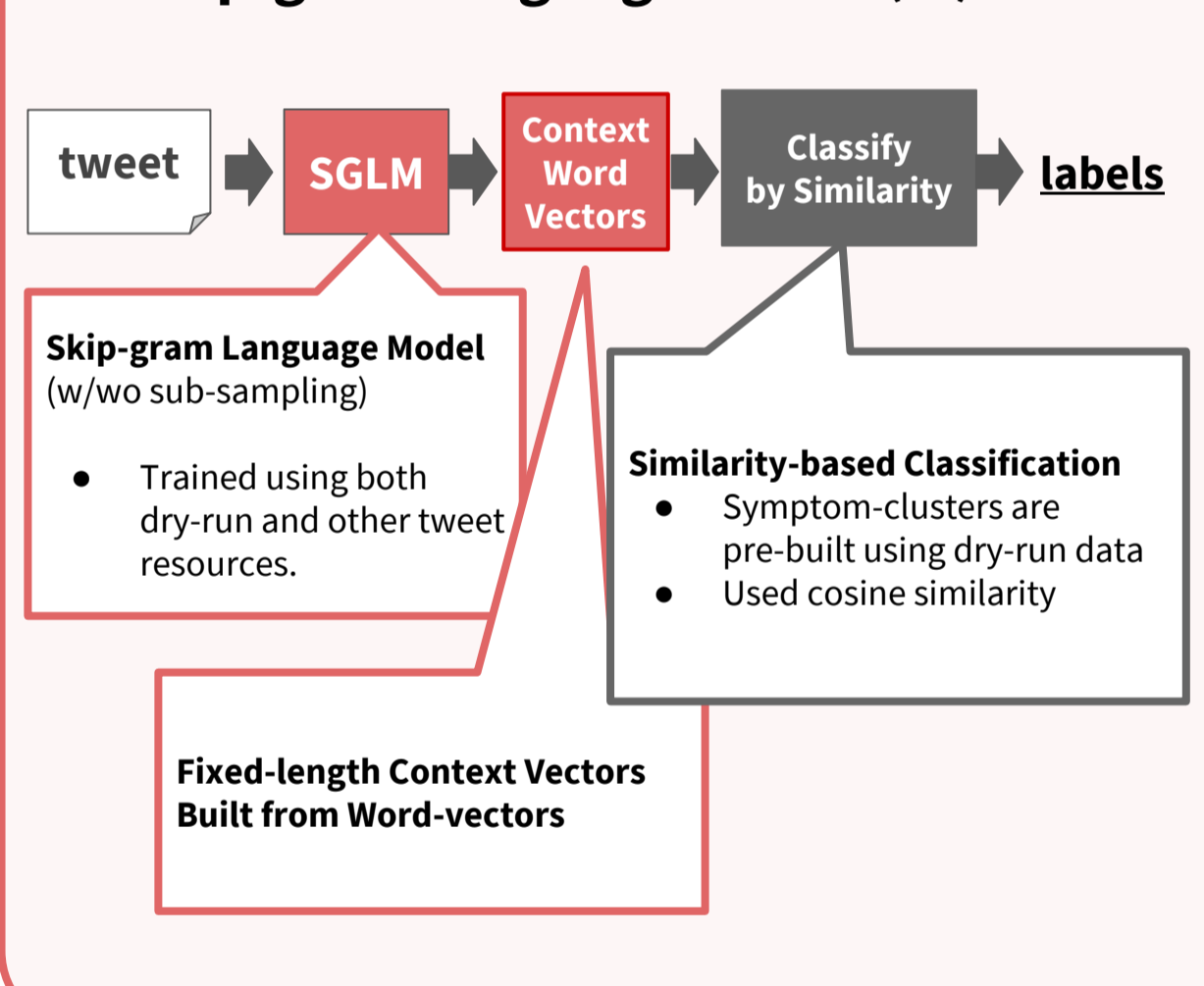
### 1. Rule-based method using symptom-specific dictionaries (Ja)



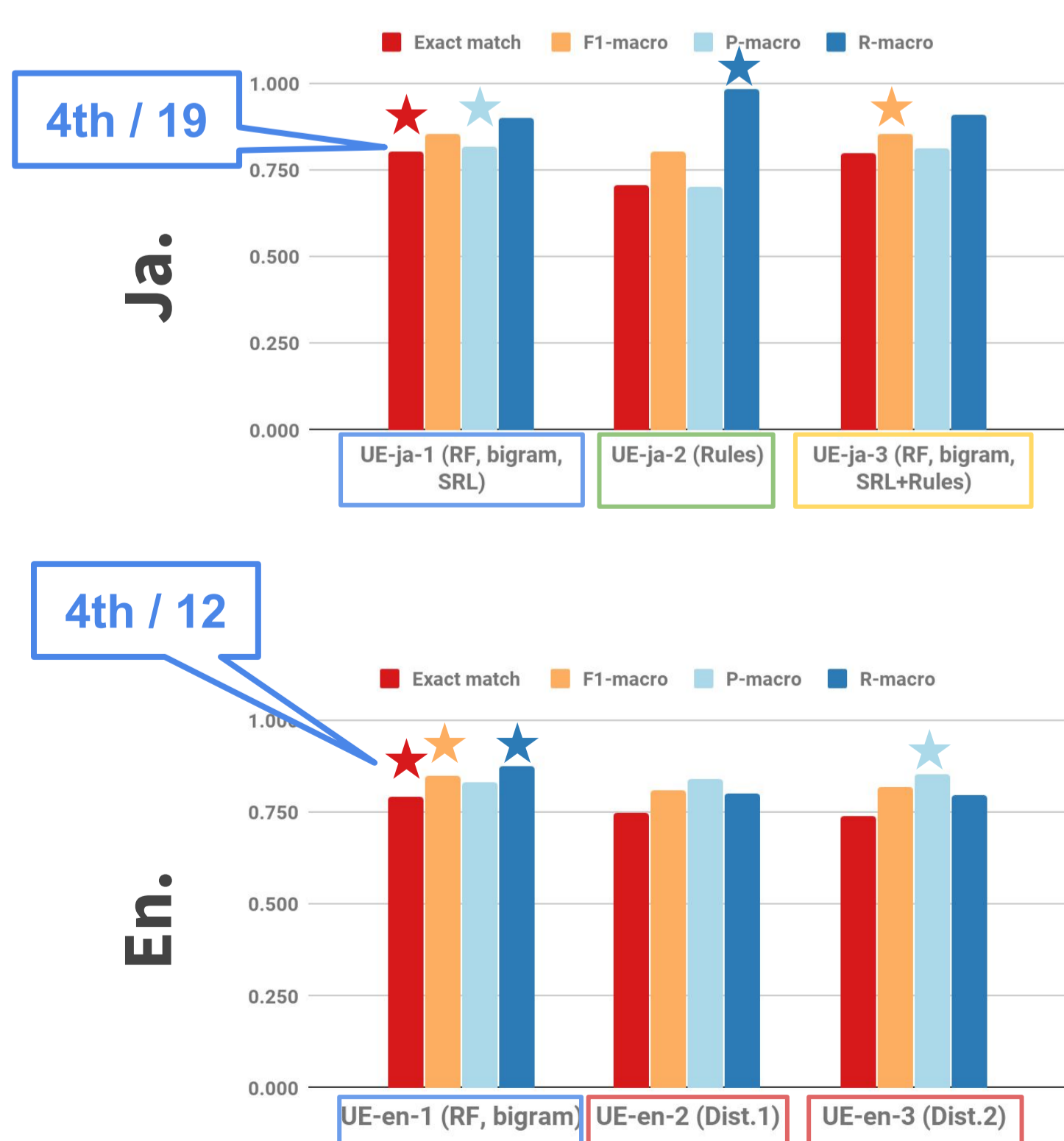
### 2. Random Forests + N-grams + SRL + Pre/post processings (Ja, En)



### 3. Distributed representations via skip-gram language model (En)



## Formal-run Results



## Analysis & Findings

By error-analysis, we found common difficulties. They are mostly **FALSE POSITIVE**.

#### Inanimate (non-human)

犬って鼻づまりとかするのかな?  
(I wonder if dogs get things like stuffy noses?)  
Runnynose / FP (UE-ja-2: Rule-based)

**Better use of ontology may be a help!**

#### Rhetorical (such as metaphors)

誰が巫女に熱あげているって?  
(Someone has the hots for the miko?)  
Fever / FP (UE-ja-1: Feature-engineering)

**More sophisticated features can be a help!**  
e.g. discourse-level-features

#### Discourse (zero-anaphora, polarity-switch)

インフルかと思って病院に行ったけど、検査したら違ったよ。  
(I thought I had the flu so I went to the doctor, but I got tested and I was wrong.)  
Influenza / FP, Fever/FP (UE-ja-1: Feature-engineering)

... Of course we **NEED** more **DATA!!!**