Frowning Frodo, Wincing Leia, and a Seriously Great Friendship

Learning to Classify Emotional Relationships of Fictional Characters

June 3rd, 2019

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Motivation

“A story consists of characters in conflict.”
Motivation

Social Network Analysis

Emotion Analysis

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Outline

1. Previous Work and Our Research Question
2. Corpus
3. Methods
4. Experiments
5. Conclusion
Research Question and Goal

Goal:
- Develop a system that predicts emotion relations between characters.

Contributions:
- Propose the new task of emotion relation classification of fictional characters
- Provide a corpus of fan-fiction annotated with emotion relations
- Propose a model for emotion relation extraction
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Data and Annotation

- 19 stories from Archive of Our Own + 1 Joyce short story
- Emotion relation triple: \((C_{feeler}, e, C_{cause})\)
  - **Character** \(C_{feeler}\) feels the emotion \(e\)
  - **Character** \(C_{cause}\) triggers the emotion \(e\) (can be empty)
  - Emotion \(e \in \{\text{anger, anticip., disgust, fear, joy, sadness, surprise, trust}\}\)
- Annotators label character mentions with canonical names
Data and Annotation

Hermione looked at Draco curiously...

As Rick deliberated, Daryl finally lost patience.

- Agreement limited on text level (<24 % F₁)
  but ok on graph level (<69 % F₁)
- 1742 feeler+emotion annotations
- 1335 feeler+emotion+cause annotations
Methods: Pipeline

- Story
- NER/Coref
- Emotion
- Relations
- Graph

Baseline: Oracle
Models: Oracle
NRC Dict.
BOW-RF and GRU NN
Heuristics
Heuristics
Oracle
Oracle
Heuristics
Heuristics
GRU models

GRU-based classifier

Embeddings (GloVe)

<e1> Sauron <e1/> wants <e2> Frodo <e2/> dead
Entity Indicators

- **No-Ind**
  Alice is angry with Bob

- **Entity**
  <entity> Alice </entity> ... <entity> Bob </entity>

- **MaskedEntity (MEntity)**
  <entity> is angry with </entity>

- **Role (informs model about direction)**
  <exp> Alice </exp> is angry with <cause> Bob </cause>

- **MRole (informs model about direction)**
  <exp/> is angry with <cause/>
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RQ 1: Which model works best? (story-level)

8 classes, directed

![Graph showing F1 Measure for different models]

- BoW-RF
- NoInd
- Entity
- MEntity
- Role
- MRole

F1 Measure

Story | Graph | MRole

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RQ 1: Which model works best? (graph-level)

8 classes, directed

![Bar chart showing F1 scores for different models]
**RQ 2: Number of Classes? (graph-level)**

- **8-class**: all emotions.
- **5-class**: join *anger-disgust, trust-joy, anticipation-surprise*.
- **2-class**: positive vs. negative emotions.
Joy
“Dance with me?” Tony’s face lit up as he let Bucky take him out on the dance floor.

Anger
... Clint rolled his eyes and made gagging noises over Bucky kissing Tony goodbye ...

Anticipation
Farrington watched her leave the room in the hope that his wife would look back at him ...
Error Analysis: Incorrect Predictions

Gold: Trust, Predicted: Fear

"We need specific vampire related knowledge." Simon nodded slowly, taking sympathy in Alec...

Gold: Anticipation, Predicted: Disgust

...This time, Drogo broke the kiss and looked into Dany’s eyes...

Gold: Anger, Predicted: Fear

"That," Izzy said, "was officially the lamest love confession I’ve ever heard." Simon huffed.
Conclusion

- New task of emotion relation classification
- Joint version of social network and emotion analysis.
- Corpus of fan-fiction annotated with emotion relations
- Polarity labels are easier than emotion labels

Data:
  http://www.ims.uni-stuttgart.de/data/relationalEmotions

More on classification/segmentation in emotion analysis:
  http://www.ims.uni-stuttgart.de/data/emotion
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