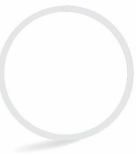

CharacterGo

Zhifan (Jeff) Sang

www.charactergo.co
<https://github.com/zfsang>
www.linkedin.com/in/zfsang/

Overview

Identifying relationships between characters is fundamental for the understanding of novels or stories.



Challenges & Approaches

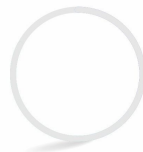


No Label

**Hard to
identify
name**

**How to
model
relationship**

**No related
viz tool**



Challenges & Approaches



Hand-Label



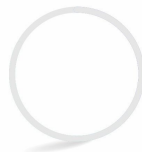
**NER
Coreference
Name Cluster**



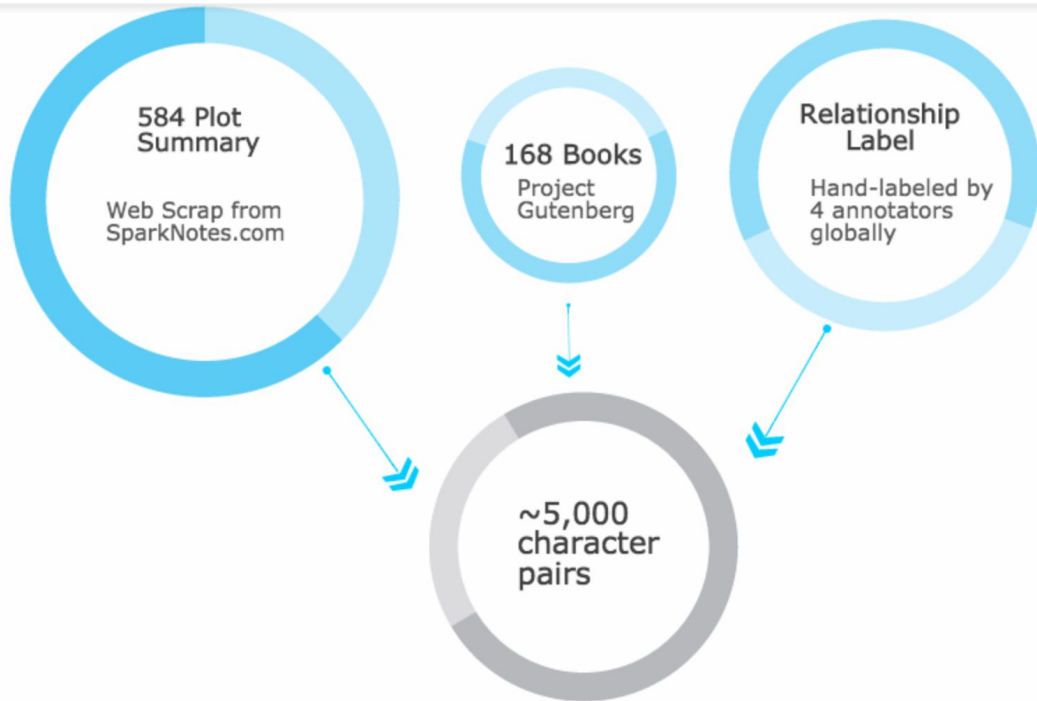
**Concurrence
Sentiment
Classifier**



**Create
Dashboard**



Data Source



“Reunited with his best friends, Ron and Hermione, Harry returns to Hogwarts ...”

Label: Friend (friend, enemy, romance, family, service, acquaintance)

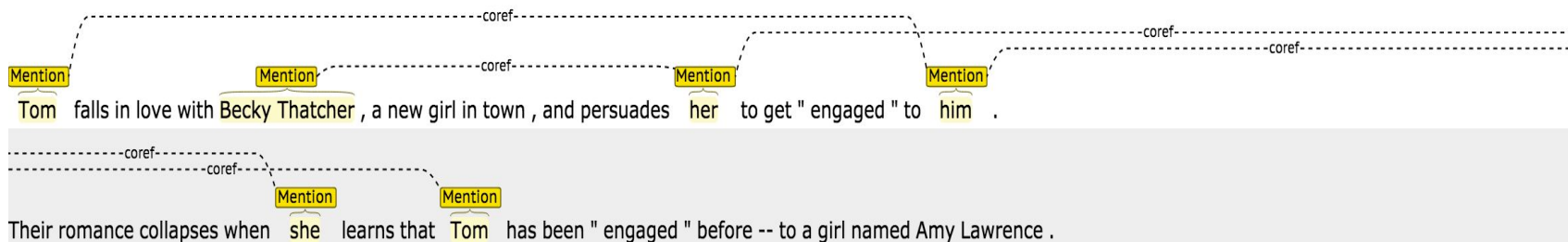


Name Entity Recognition Coref

- Name Entity Recognition

PERSON Tom falls in love with PERSON Becky Thatcher , a new girl in town , and persuades her to get " engaged " to him .

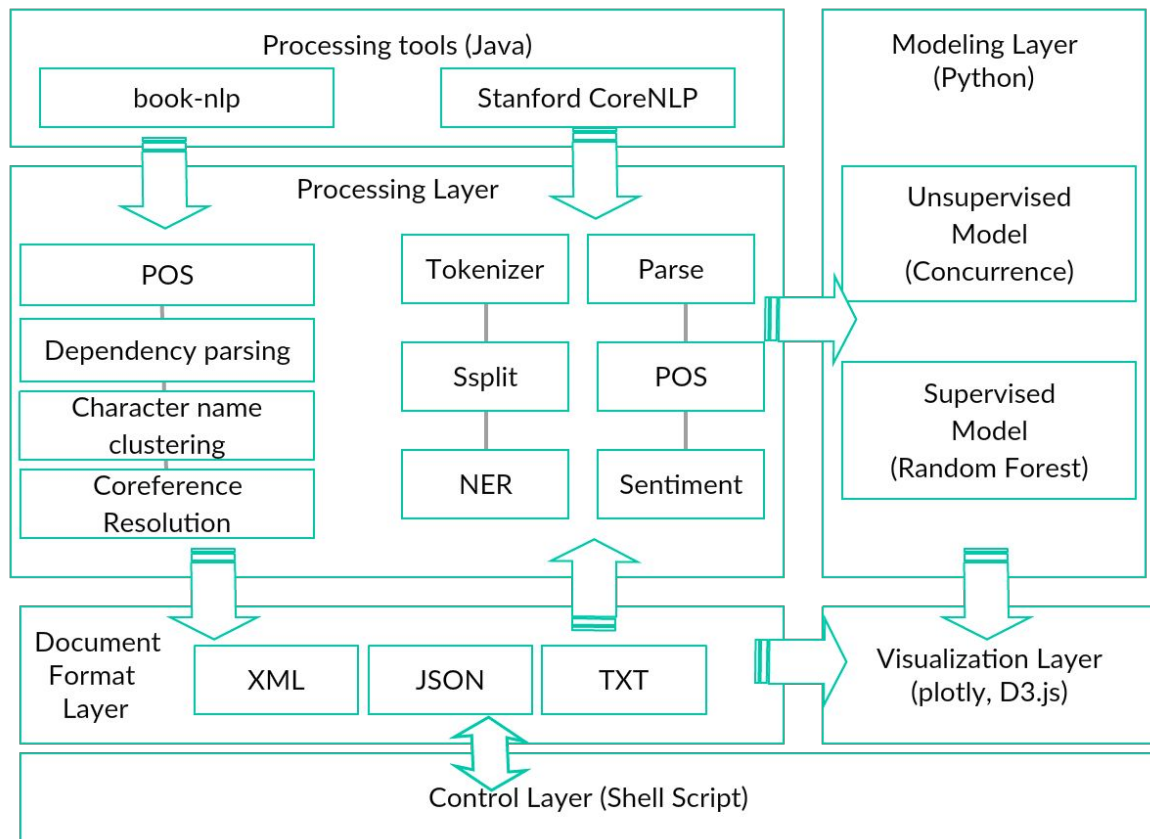
- Pronominal Reference Resolve



- Name Normalization/ Clustering
e.g., "Tom", "Tom Sawyer", "Mr. Sawyer", "Thomas Sawyer" -> TOM_SAWYER

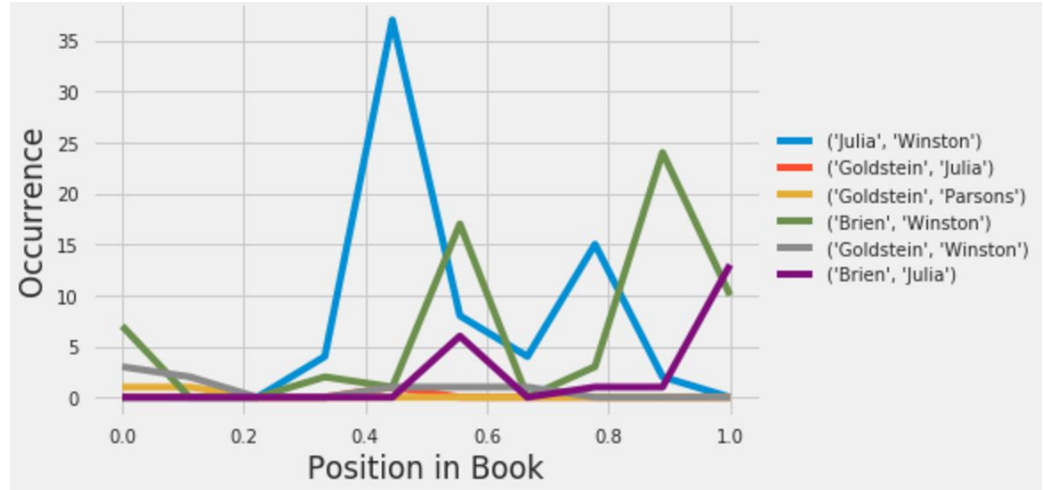
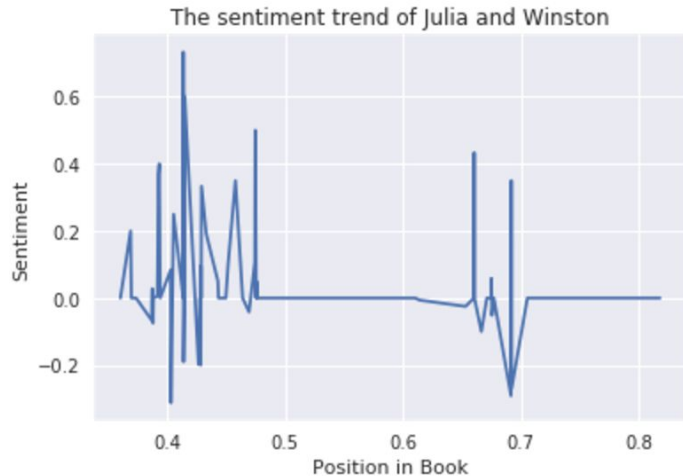


Architecture



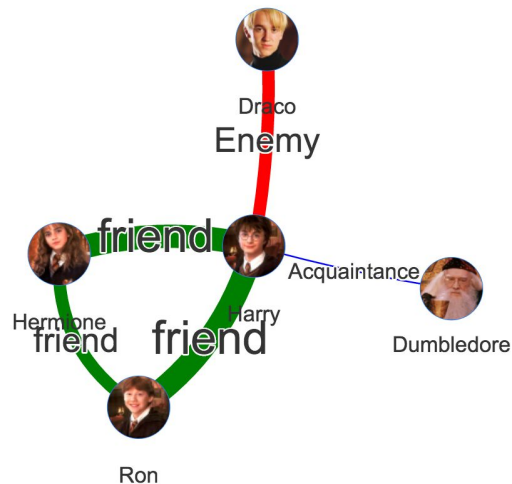
Connections between characters

- Concurrence
- Sentiment Analysis



Underlying relationships prediction

- Rule-based method
- Random Forest on word tokenizer
- Accuracy:0.69
- Top Features:
Leave, visit, son,
discuss,adventurer, guard....



Supervised Learning: Result

After using magic to defend himself , **Harry** is visited by a group of wizards and whisked off to number twelve , Grimmauld Place , London. Number twelve is the home of Harry 's godfather , **Sirius Black** , and the headquarters of the Order of the Phoenix ." -> **family**

Harry and his friends summon **Kreacher** , the house-elf who came with the house . Harry orders **Kreacher** to find Mundungus and bring **Harry** back . -> **service**

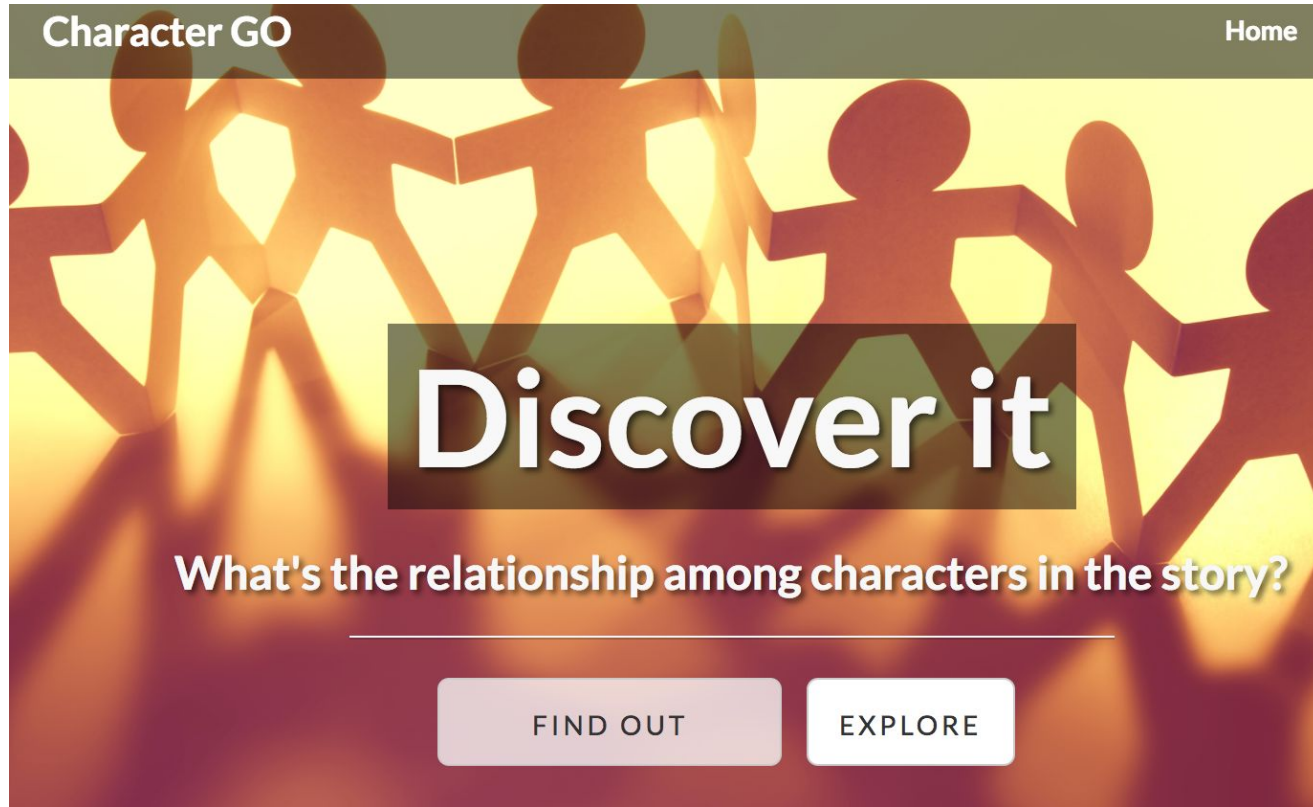
Harry then encounters **Lucius Malfoy** , the evil father of one of Harry 's enemies , who almost starts a fight with Mr. Weasley. -> **enemy**

A few weeks later, **Hagrid** wins a dragon egg in a poker game. Because it is illegal to own dragons, Harry, **Ron**, and Hermione contact **Ron**'s older brother, who studies dragons. -> **family (Wrong)**

False Positive

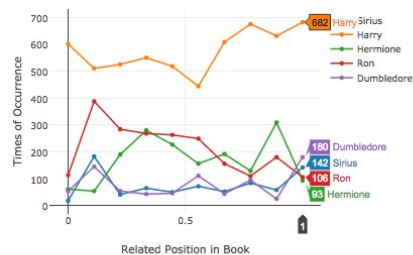


Web App

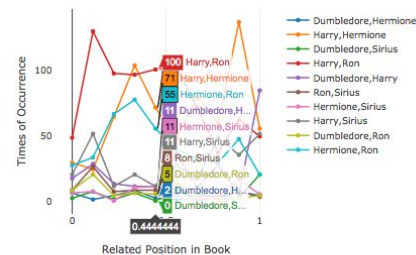


Web App

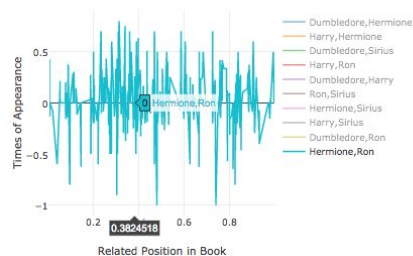
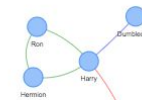
Individual Character Occurrence Trend


[Edit chart »](#)

Pair Charater Occurrence Trend


[Edit chart »](#)

Sentiment Trend


[Edit chart »](#)


Characters

4132 Harry (3814) Potter (193) James (76) Harry Potter (46) Harry James Potter (2) POTTER (1)
 1357 Ron (1292) Weasley (58) WEASLEY (4) Ron Weasley (2) RON (1)
 1275 Hermione (1260) Hermione Granger (8) Granger (6) HERMIONE (1)
 637 Dumbledore (622) Albus Dumbledore (13) DUMBLEDORE (2)

going to give her (Umbridge) the satisfaction of hearing that he (Ron) had complained about it. ``I cant believe how much homework weve got," (Ron/Weasley/WEASLEY)said Ron miserably. ``Well, why didnt you do any last night?" (Hermione/Hermione Granger/Granger)Hermione asked him (Ron). ``Where were you, anyway?" (unknown)``I was... I fancied a walk." (Ron/Weasley/WEASLEY)said Ron shiftilly. Harry had the distinct impression that he (Harry) was not alone in concealing things



Conclusion & Future Work

- Good performance of character relationship extraction on plot summary
- Explore use more comprehensive NLP annotations in modeling (e.g. Action, noun chunks)
- Improve web app performance

www.charactergo.co
<https://github.com/zfsang>
www.linkedin.com/in/zfsang/