NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

School of Computer Science and Engineering
College of Engineering

Modelling Self-Awareness in Social Robots

Extracting sentiment networks in Harry Potter

Can machines understand human feelings?
Can we recreate the consciousness of Harry Potter using Artificial Intelligence?
How would Harry Potter think of the world today?
These are the questions we aim to answer in the project.

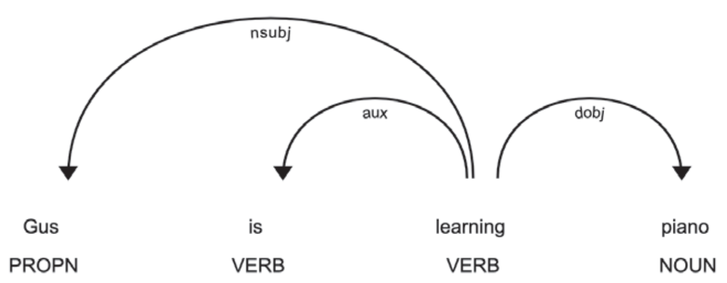
Extracting Sentiment Networks from fictional text was first done by Eric T. Nalisnick and Henry S. Baird in 2013, from Shakespeare's Plays. This project improves upon the current research in the following ways:

Coreference Resolution

Hermione buried her face in her arms.

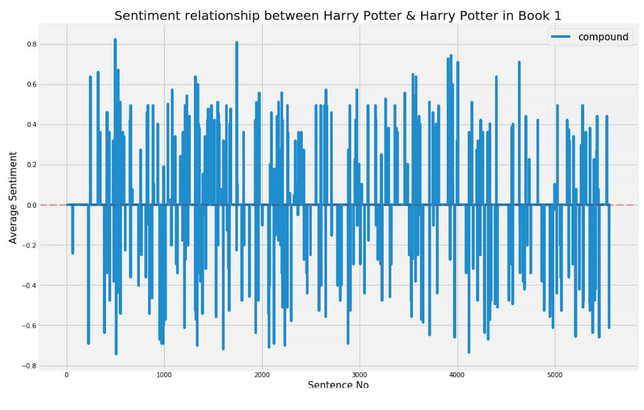
Replacing expressions like pronouns with the actual entity name (her with Hermione)

Direction of Sentiment



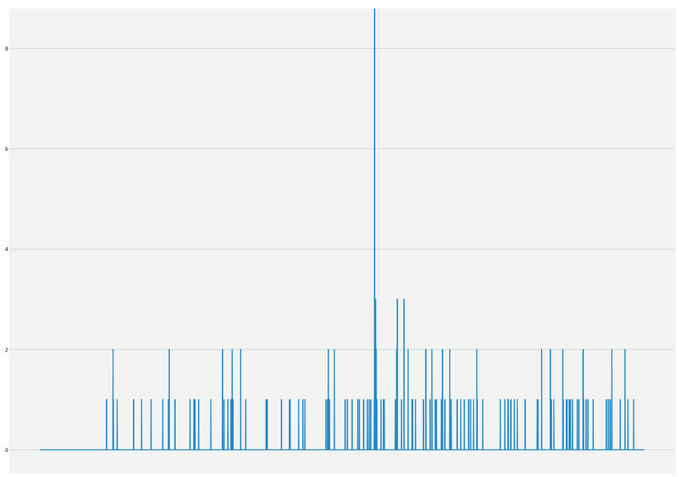
Dependency Algorithm & OpenIE to find which entity is the subject and target of a feeling/action

Sentiment Analysis



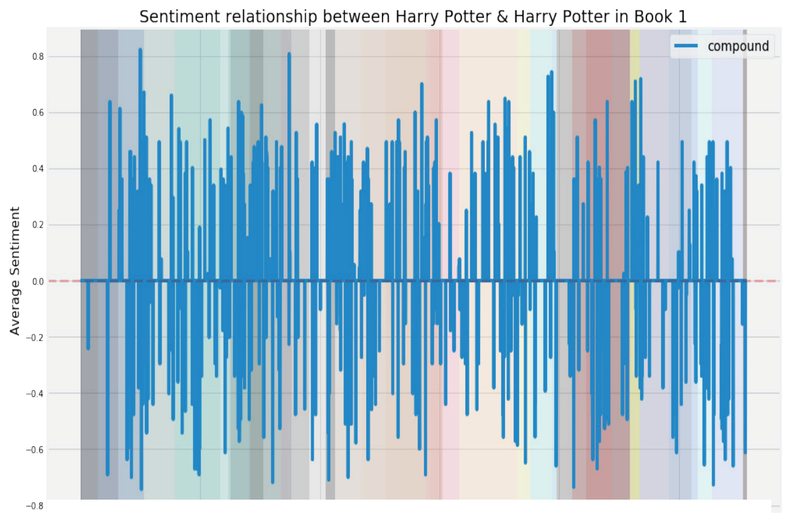
VADER lexicon to deduce whether the feeling is positive/negative/neutral

Emotion Analysis



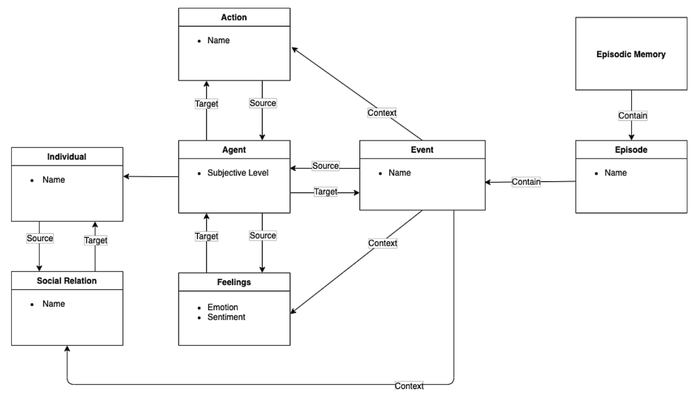
NRC EmoLex to deduce if the emotion is anger, joy, fear, disgust, surprise etc

Event Tagging



Tag feelings of a character to an event in the story.

Awareness Model



Create Episodic and Sentiment Memory data models for AI applications

A human study was conducted with 5 problem sets, each containing 10 extracted phrases, sent to over 15 different raters to rate the accuracy of the above aspects. Direction of Sentiment is rated at 92%, with a representation score of 3.7/5.0 (how well did the extracted phrase represent the emotions in the entire sentence). Sentiments and Emotions extracted were rated at 3.5/5.0. Sentiments extracted were shown to be reliable in all aspects.

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