ShakesPeer:

A Tool for Visualizing Character Relationships in Shakespearean Literature

CPSC 547
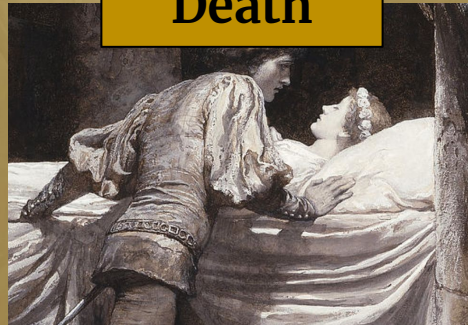Frances Sin, Kevin Chow, Mint Tanprasert

Motivation

Shakespearean literature can be difficult to understand

- Unfamiliar diction + syntax
- Complex storylines
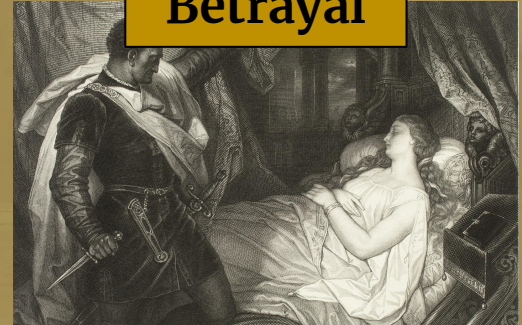- Richly textured characters and dynamic relationships

Love

Death

Betrayal

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Goal of *ShakesPeer*

Help readers understand & keep track of **characters**
and their **relationships**

?

Background

A Midsummer Night's Dream (1595)

- Multiple interconnecting plots
- Characters frequently fall in and out of love with each other

Character-to-Character Sentiment Analysis

- Determine how character A 'feels' about character B
  - Extract all lines character A says to character B
  - Use sentiment lexicons that map words to **polarity values**
    - +ve for positive sentiment, 0 for neutral, -ve for negative

What/Why/How

What: Data

- <u>Table</u>: dialogue (with speaker, recipient)

- <u>Derived</u>:

Engagement

- # of words character *A* speaks to *B*

- # of words *A* speaks in scene *X*

Sentiment

What/Why/How (cont.)

Why: Tasks

- **Discover** how sentiment & engagement change over time

- **Compare** character relationships

- **Identify** points in story where major relationship changes occur

When does Titania fall in love with Bottom?

How does Bottom feel about Titania at the end of the play?
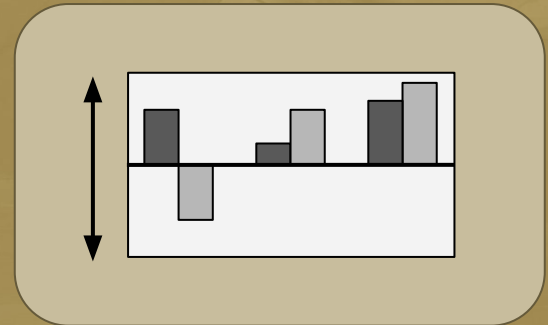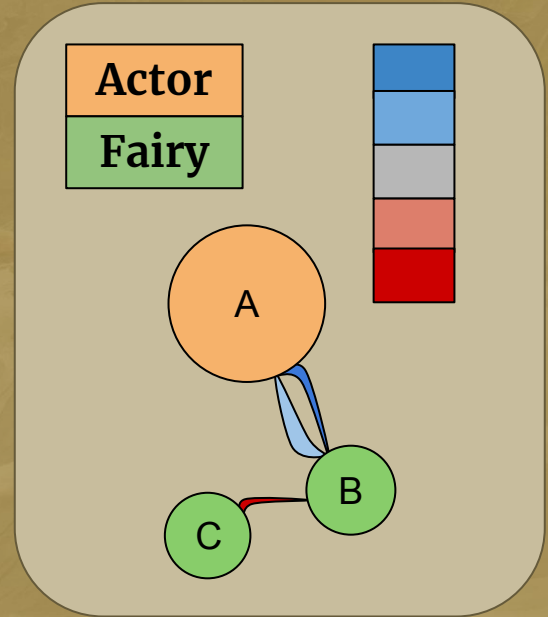

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What/Why/How (cont.)

How: Encode

- **Directed graph**
  - **Color** for character type, sentiment
  - **Size** for engagement
- **Grouped bar chart** with diverging y-axis
  - **X-pos** for scene, **Y-pos** for sentiment

How: Reduce

- **Filter** by scene, character, character type

Implementation

1. Pre-processing of full play script
    - Extracting characters, word count per scene/character, etc.
2. Perform character-to-character sentiment analysis
    - Natural Language Toolkit in Python 3
    - Bing Liu's Sentiment Lexicon
3. Implement web app
    - D3.js for visualization
    - Angular front-end framework

Web App Components
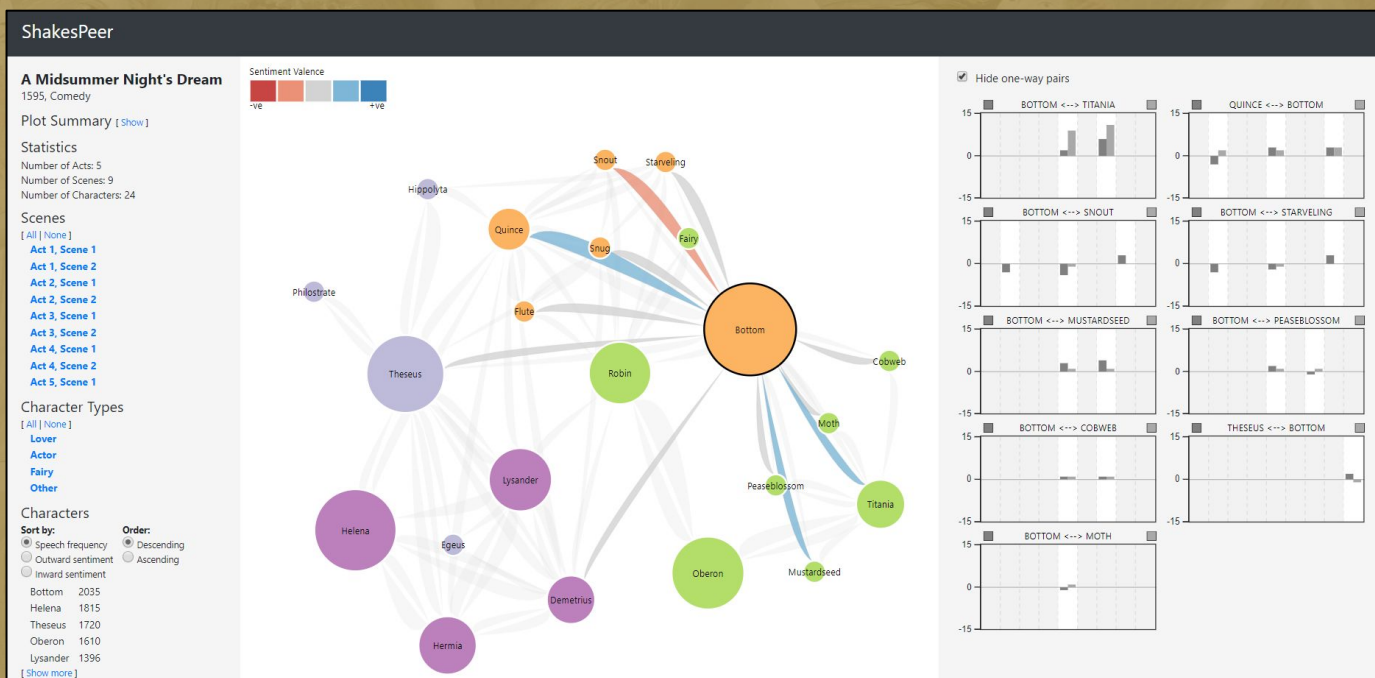
Demo

Scenario of use

Imagine you are writing a report about **Bottom**

You want to answer the following questions:
- Which characters does he interact with?
  - Does he interact with any of the **fairies**?
- When does Titania first encounter Bottom?
  - How do they feel about each other?
- In the scenes where the two characters interact, who speaks the most? Who does Bottom speak to the most?

Bottom

Titania

Future Work and Limitations

Comparing and visualizing **multiple plays**

- How does **Titania and Bottom's** relationship compare to **Romeo and Juliet's**?

Addressing the **"hairball effect"**

- Problems with scale: many characters and many relationships
  - Shakespeare's plays can have 60+ characters!
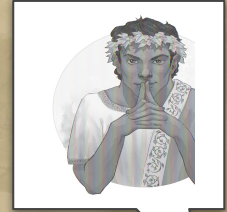- Alternatives like **matrix** views

Future Work and Limitations (cont.)

Naive assumptions for sentiment analysis

- What happens if character **A** talks to character **B** about character **C**?
  - e.g. Gossip

Running usability studies

- Who would use it and what would they want?
  - Different needs of **students, literary scholars, or professors?**
  - Making **recommendations** about what to explore first?
  - Other measures of interest besides sentiment?
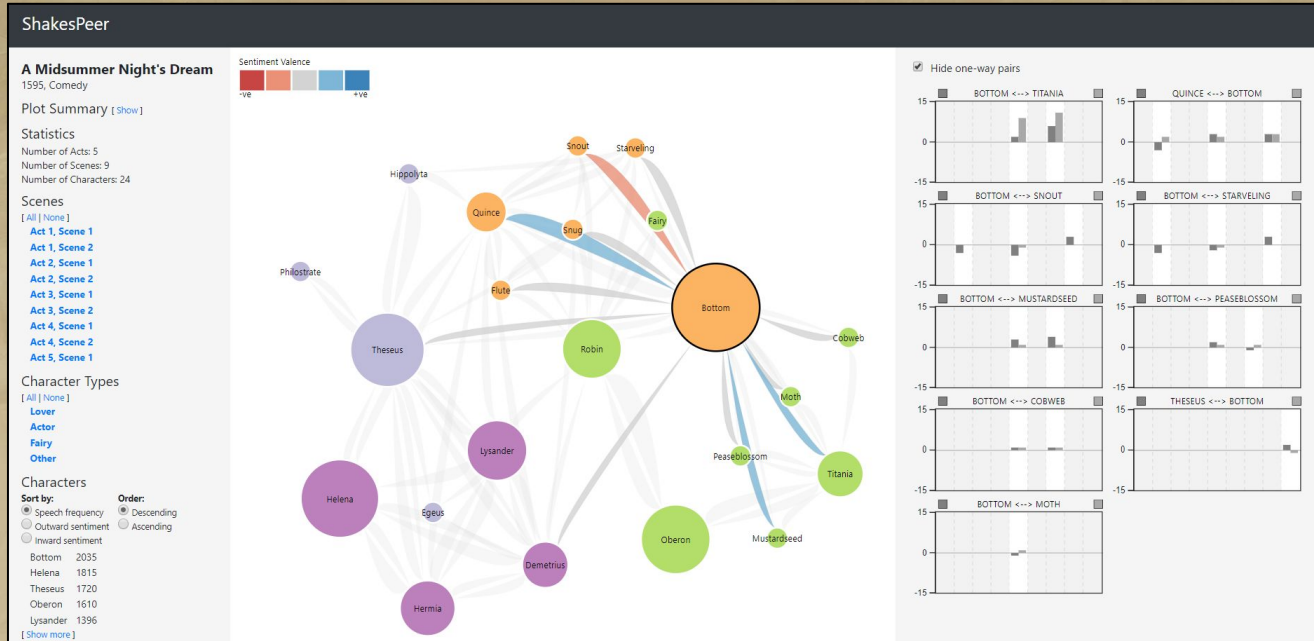   - e.g. Setting of speech, Themes

Thank you!

Image references:
- https://www.bl.uk/collection-items/william-blake-painting-of-fairies-in-a-midsummer-nights-dream
- https://blog.cpyb.org/midsummercharacter/
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