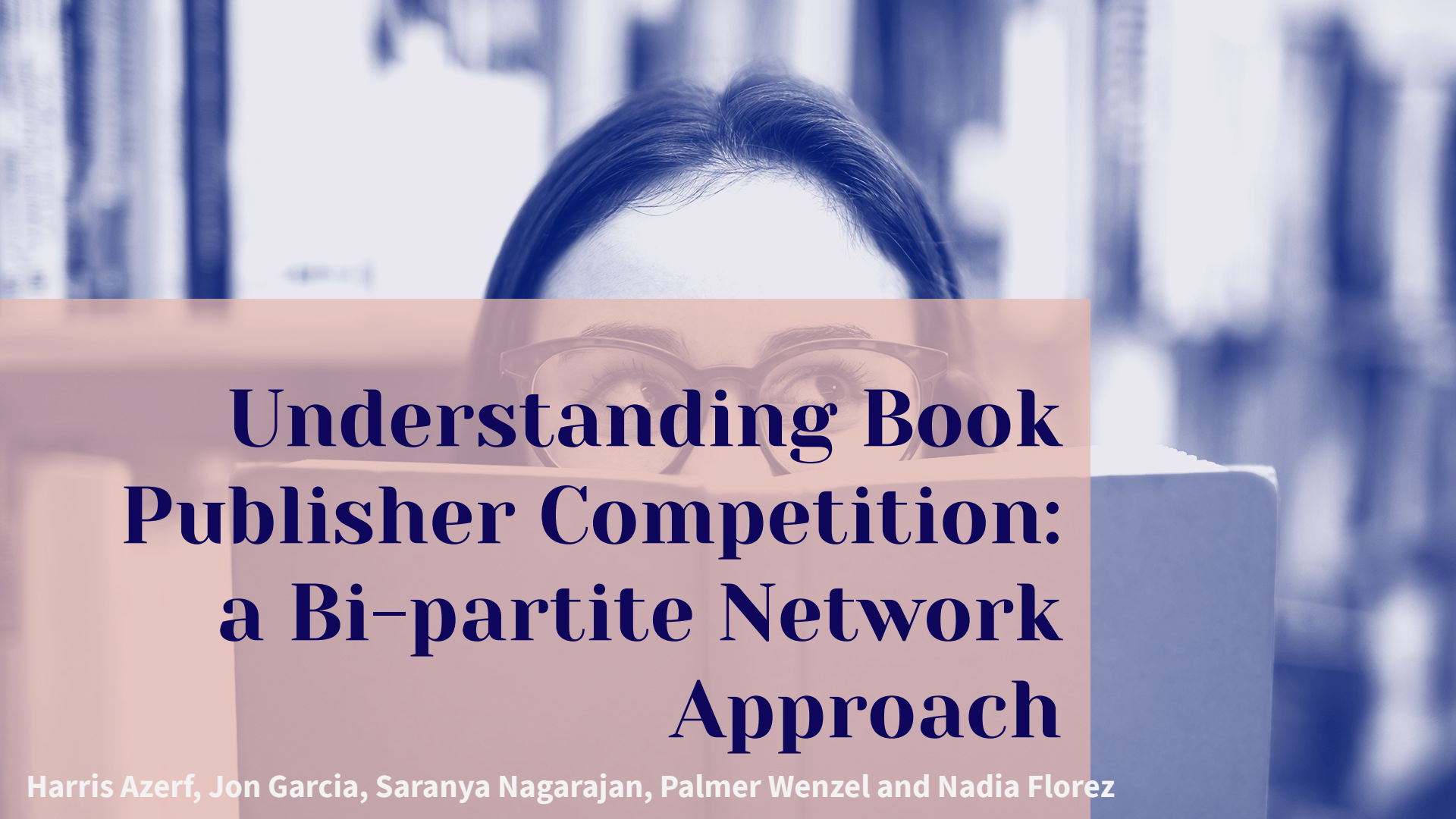

Understanding Book Publisher Competition: a Bi-partite Network Approach

Harris Azerf, Jon Garcia, Saranya Nagarajan, Palmer Wenzel and Nadia Florez

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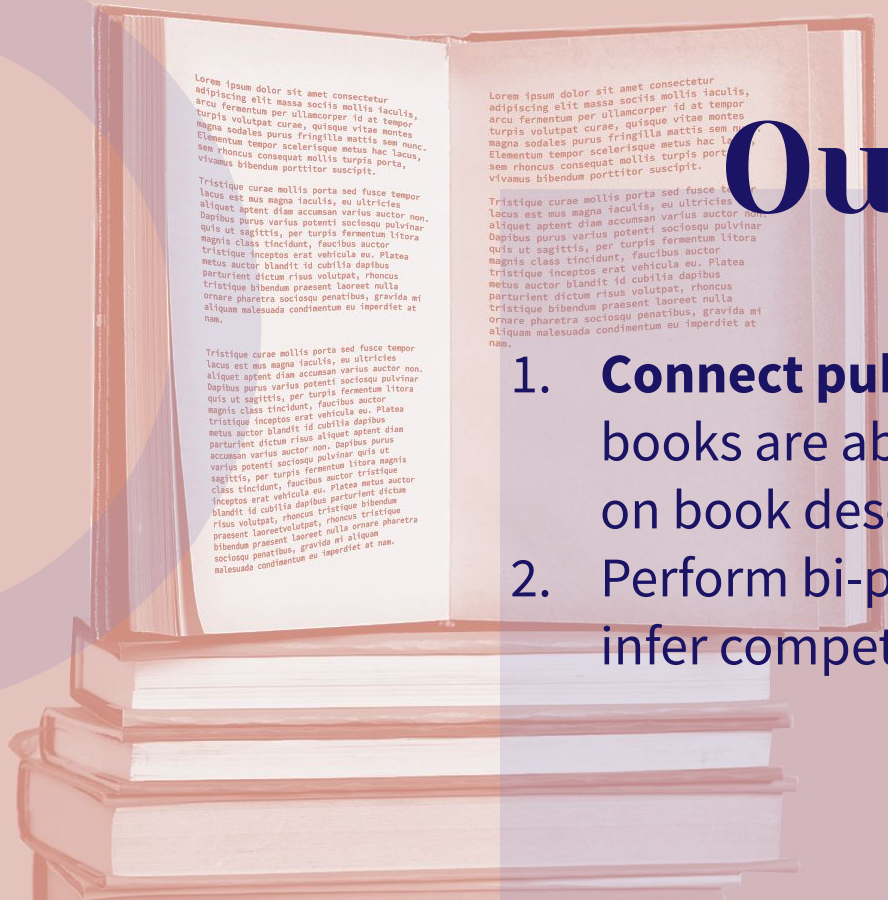
Problem Statement

To infer the **competitive market characteristics** of the book publisher industry by leveraging the vast repository of **book data** available through Goodreads



Our Approach

1. **Connect publishers** to the **topics** their books are about using LDA topic modeling on book descriptions
2. Perform bi-partite **network analysis** to infer competitive network characteristics

Goodreads Book Data

Tools

- BeautifulSoup : Get Book IDs from genre list
- BetterReads: Get information on the books

Information

- Title
- Author
- Publisher
- Language
- Description

Cleaning Data

- Removed foreign books
- Removed any books with missing information

Goodreads Book Data

Young Adult

Books: 3341
Publishers: 1321
Authors: 2301

Top Publishers

1. HarperTeen (74)
2. HarperCollins (70)
3. Simon Pulse (69)

Science Fiction and Fantasy

Books: 3096
Publishers: 1210
Authors: 1592

Top Publishers

1. Del Rey (98)
2. Tor Books (91)
3. Ace (76)

Crime and Mystery

Books: 3099
Publishers: 1032
Authors: 1577

Top Publishers

1. Minotaur Books (65)
2. Bantam (62)
3. Grand Central Publishing (60)

Topic Modeling

1. LDA topic modeling based on synopsis

2. Topics for each book within a genre
(Book Topics = Topic Weights > 0.4)

3. Aggregate by publisher and topic

4. Topics for each genre

Topic Modeling – Genres & Topics

Young Adult

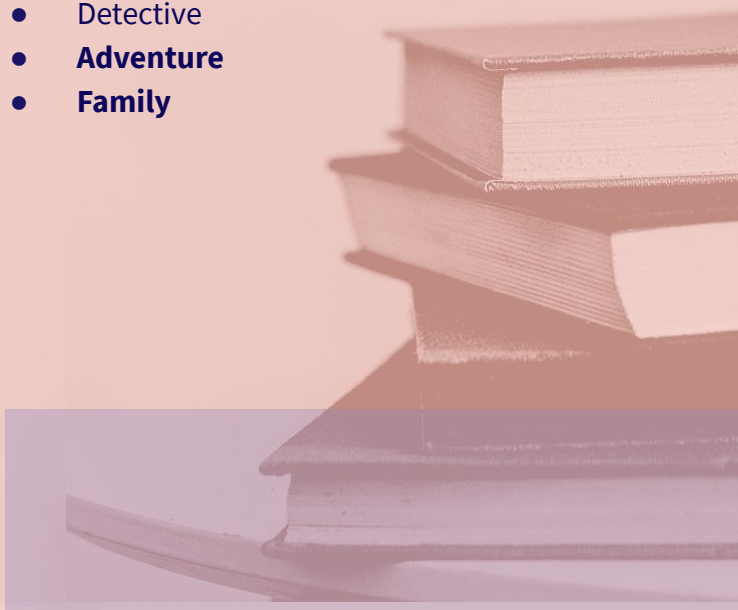
- **Adventure**
- **Love**
- Mysterious
- Life
- High School
- Transition
- Tragedy
- Friendship
- **Family**
- Drama

Sci-Fi

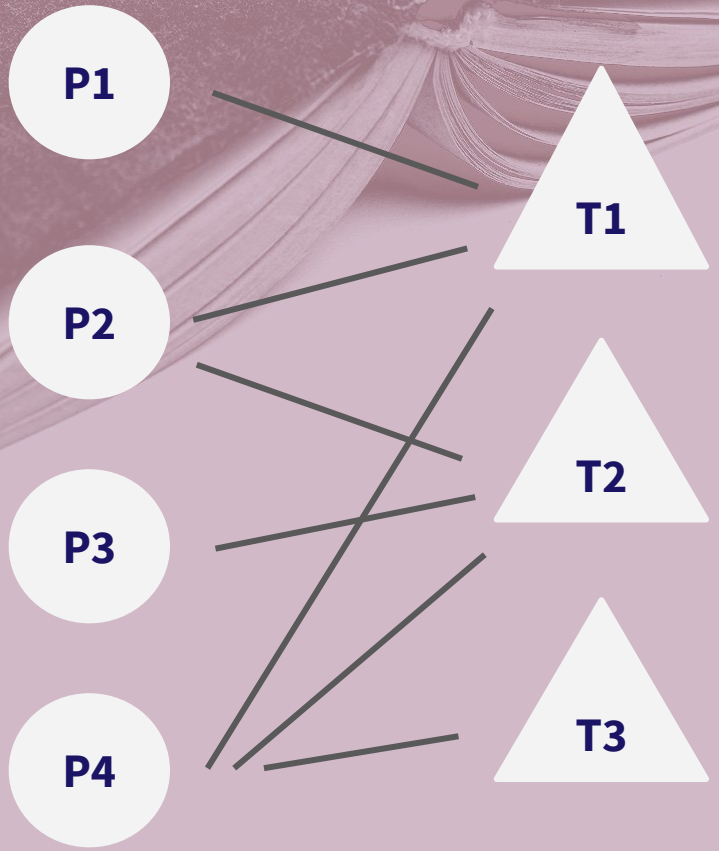
- **Adventure**
- Mythical
- Alien
- Medieval
- Magical
- **Love**
- Space
- Heroic
- War
- Historical

Mystery

- Crime
- **Love**
- Detective
- **Adventure**
- **Family**

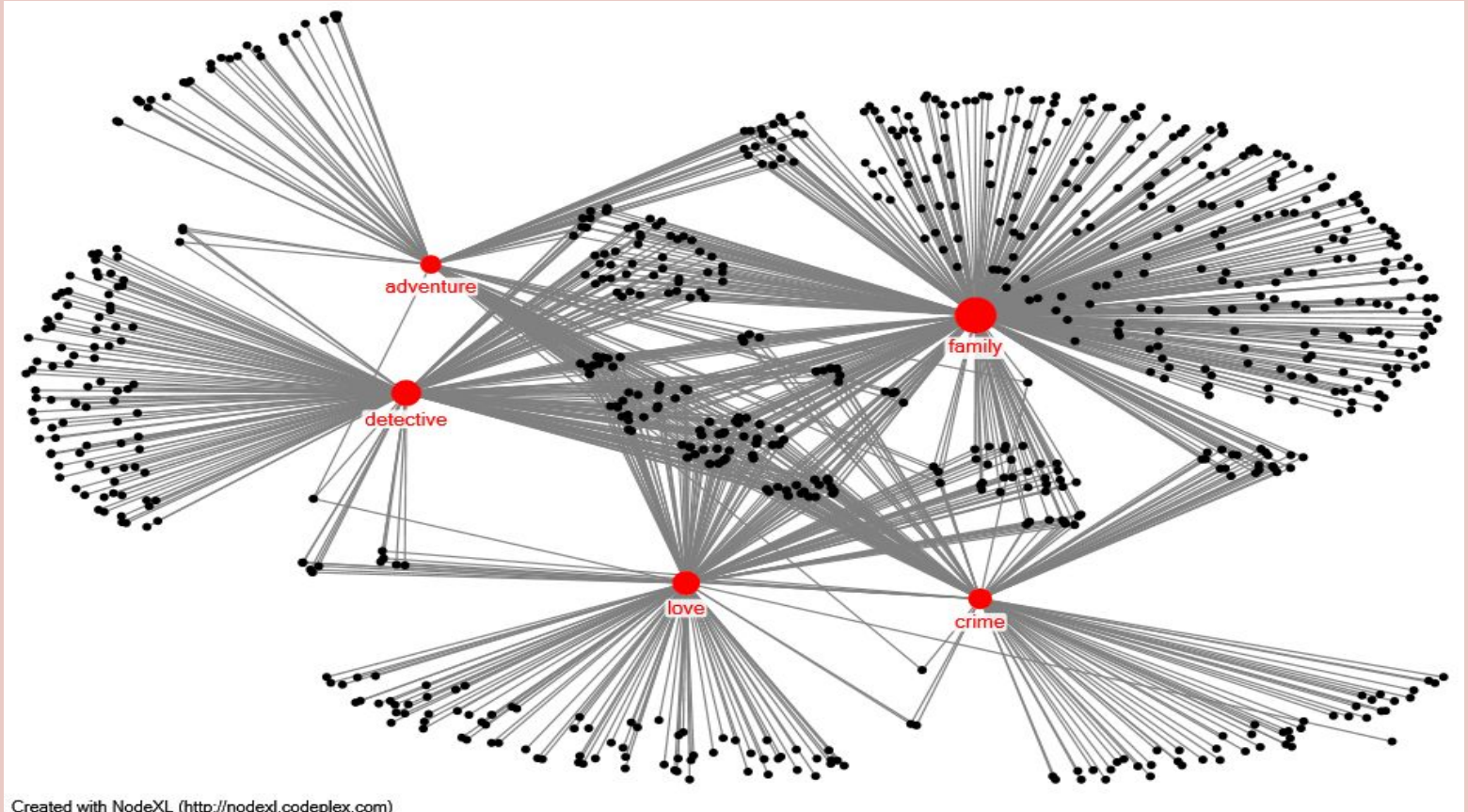


Bi-partite Network Modeling

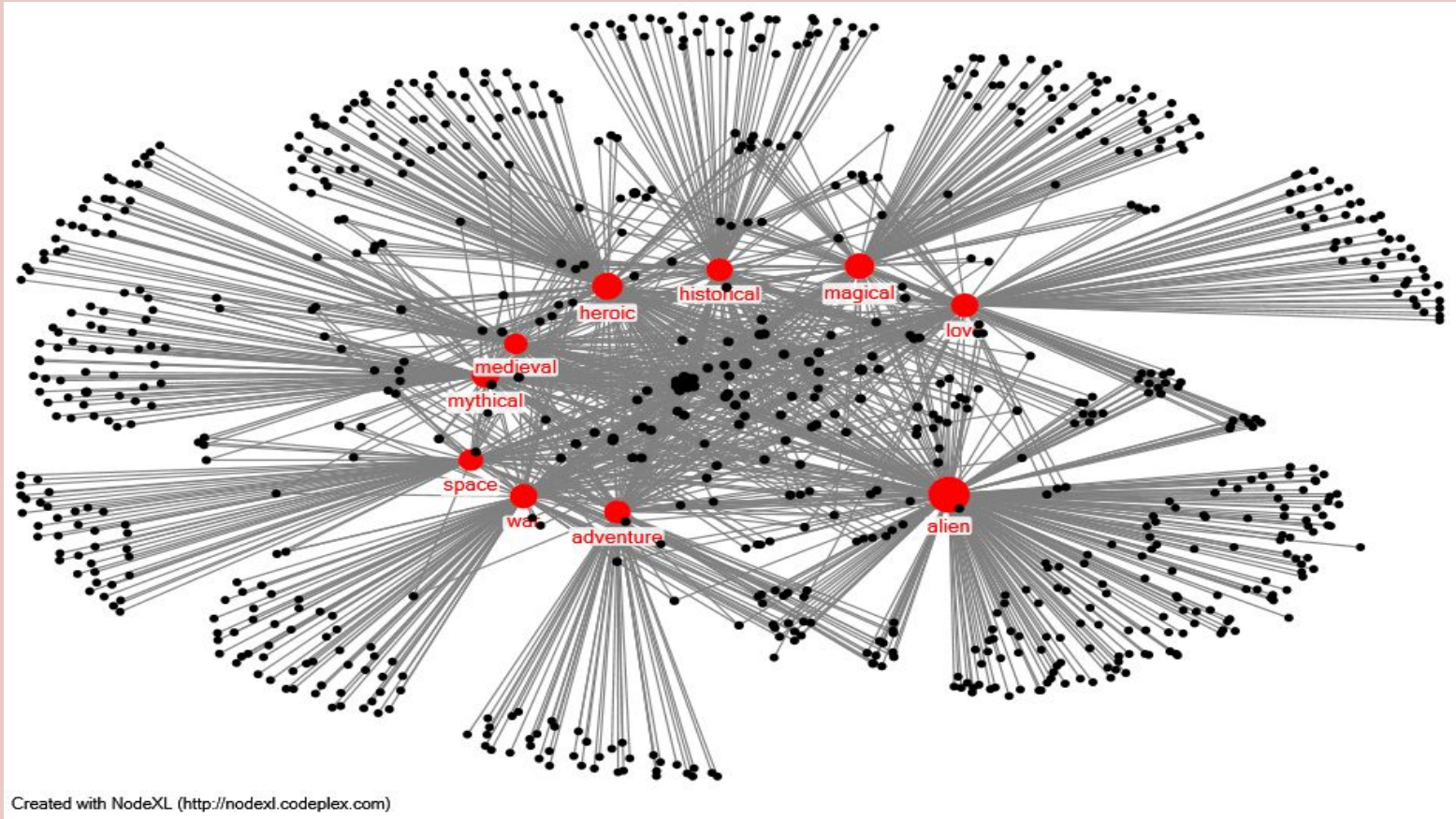


- Created a bi-partite network of Publishers and Topics for each genre
- Computed a matrix with the publishers on each axis with cell values as the number of topics in common
- De-constructed the bi-partite network into one of publisher-to-publisher based on number of topics in common

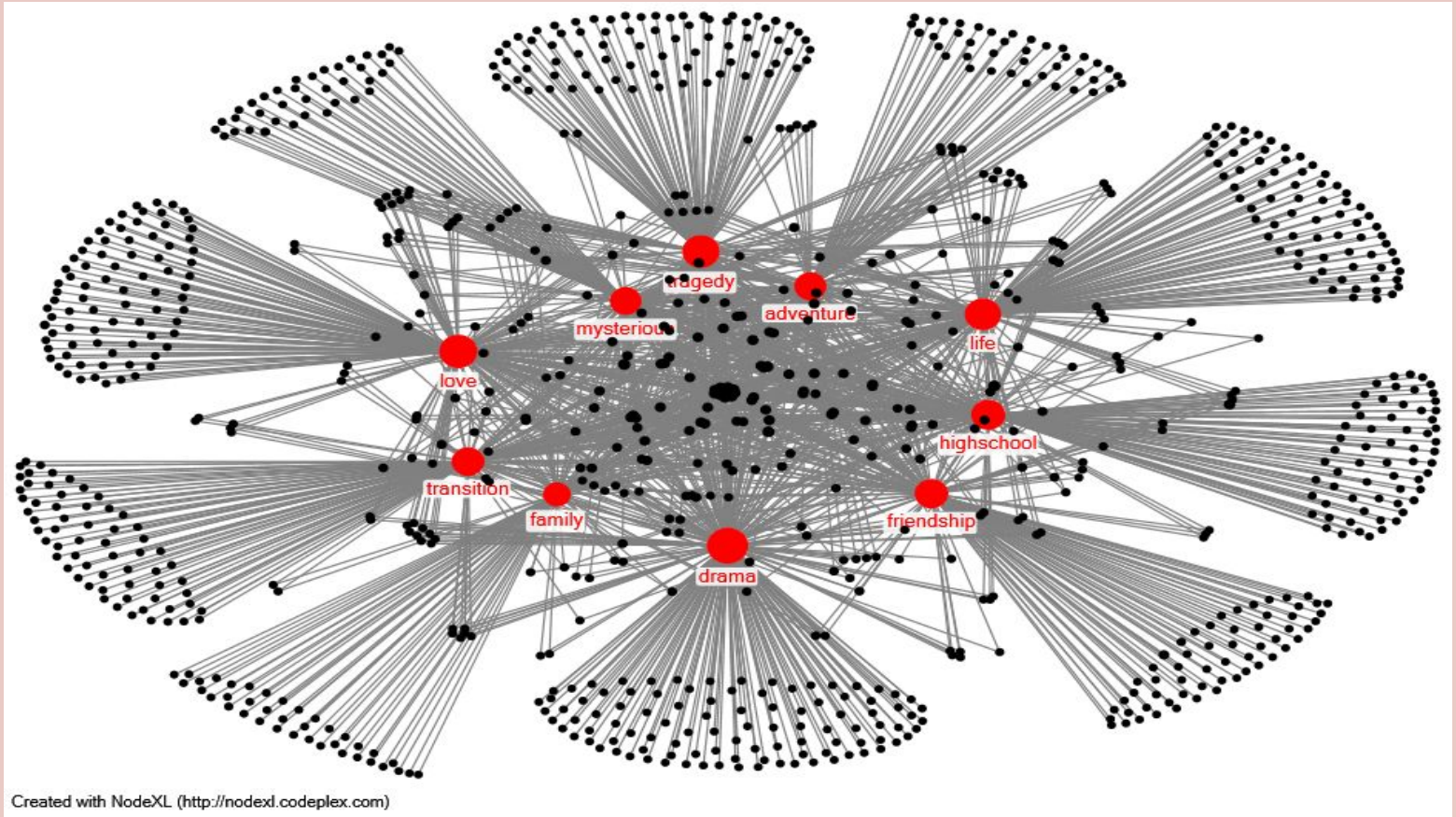
Bi-partite Network: Mystery



Bi-partite Network: SciFi



Bi-partite Network: Young Adult



Network Analysis

Genre	Num publishers with more than 2 topics	Num publishers in the main community
Young Adult	189	188
SciFi	123	122
Mystery	121	112

- Created a publisher-to-publisher network with an edge between publishers with > 2 topics in common
- Applied Girvan-Newman to find communities within the network
- Publisher-to-publisher network did not yield very interesting results

Insights

For Publishers

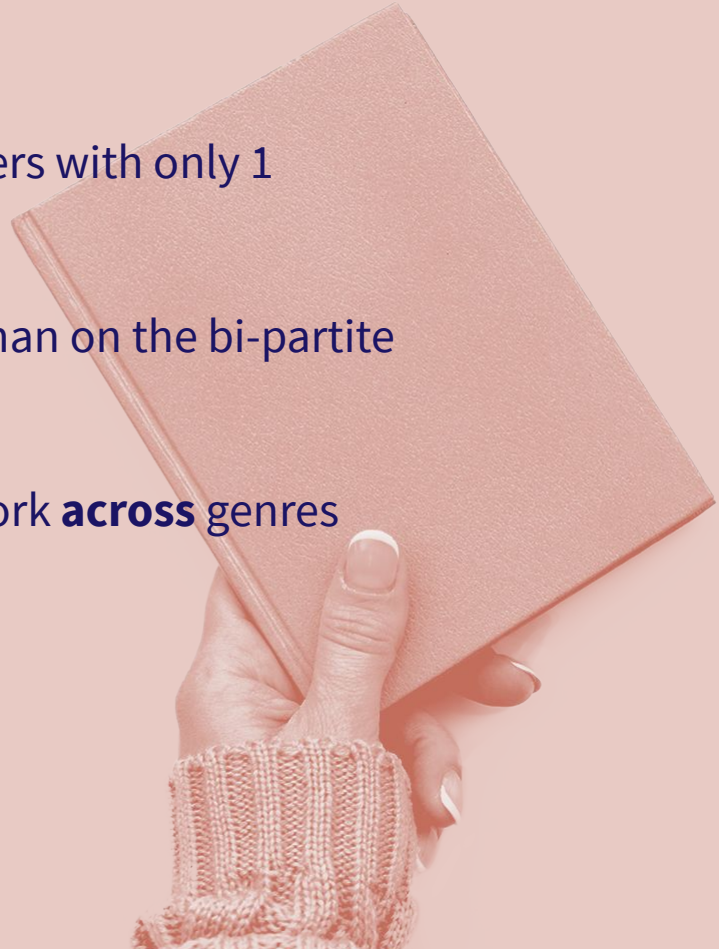
- Understand crowding of book topics so if a publisher wants to deviate from the norm, it can publish on something “niche”
- By the same token, understand the potential of a book based on what it is about if topic is popular

For Authors

- Know which publishers to go to based on the topics they publish about
- Write on successful but niche topics

Final Remarks

- There is value in understanding “niche” publishers with only 1 associated Topic
- A better approach would be to use Girvan-Newman on the bi-partite networks
- An extension would include looking at the network **across** genres



Thanks

Does anyone have any questions?