An Analysis about Character Relationships in HP Series & HPMOR

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Background

HP Series: *Harry Potter* series

- A series of fantasy novels written by British author J. K. Rowling.
- Seven books

HPMOR: *Harry Potter and the Methods of Rationality,* a Harry Potter fan fiction by Eliezer Yudkowsky.

- Adapt the story of Harry Potter by applying the scientific method to the fictional universe of author J. K. Rowling.
- 122 Chapters
- English Version: http://hpmor.com/
- Chinese Version: http://hpmor.lofter.com/

Problems to Be Solved

How can we know the character relationships in HPMOR roughly without reading the whole 122 chapters?

What is the difference between HP series and HPMOR in character relationship?

Outline

1. Character Relationship Network Diagram
2. Analysis about Character Relationships
3. Degree Distribution of Character Relationship Network

Character Relationship Network Diagrams

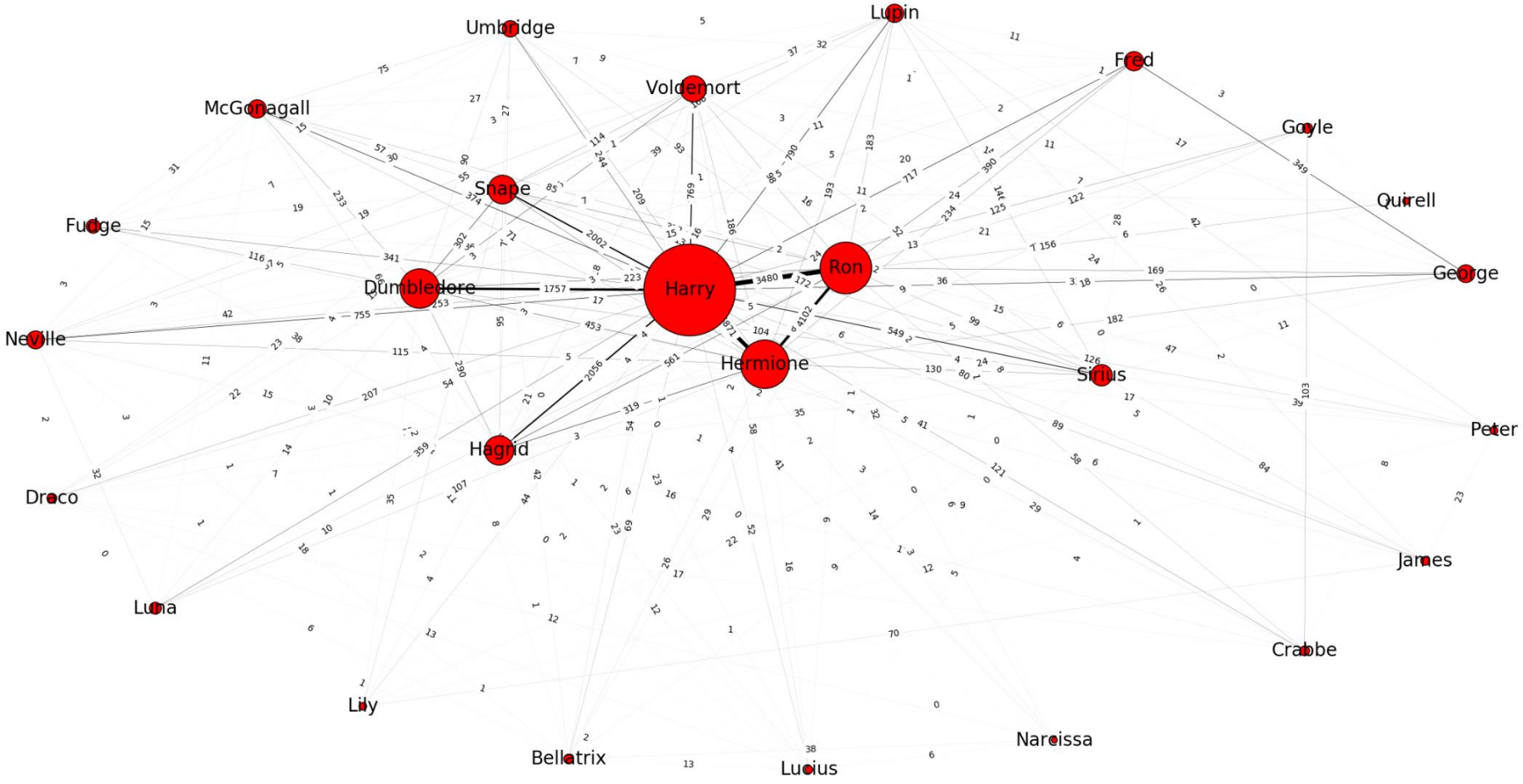
Choose **26 characters** in HP (too much work to add all characters manually)

Add the weight between two characters by one if there exist names of these two characters, and **the distance between them is less than 50 characters**.

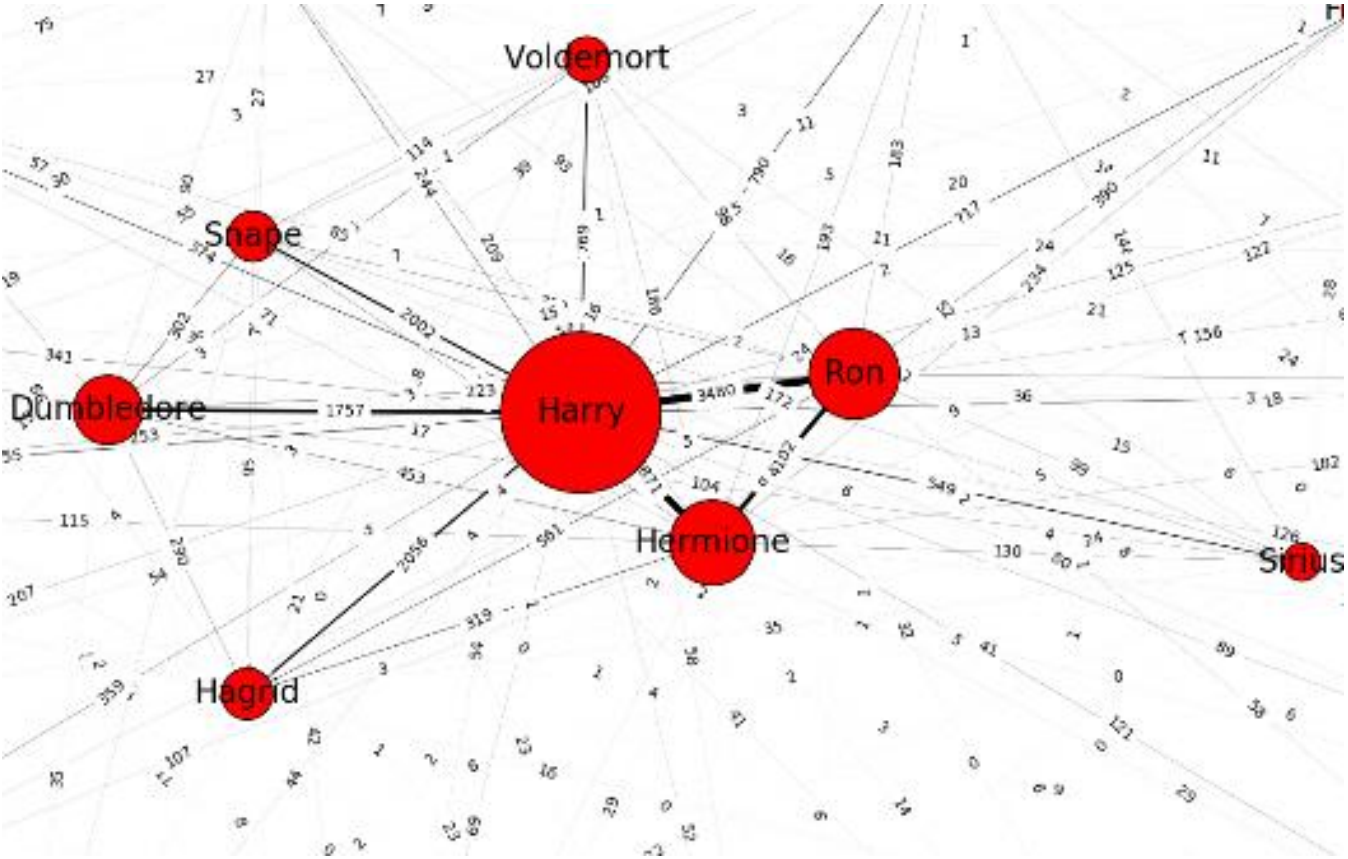
Position nodes using Fruchterman-Reingold force-directed algorithm.

Size of nodes represent how many times the character is mentioned in the novel.

Character Relationship Network Diagram in HP Series



Analysis

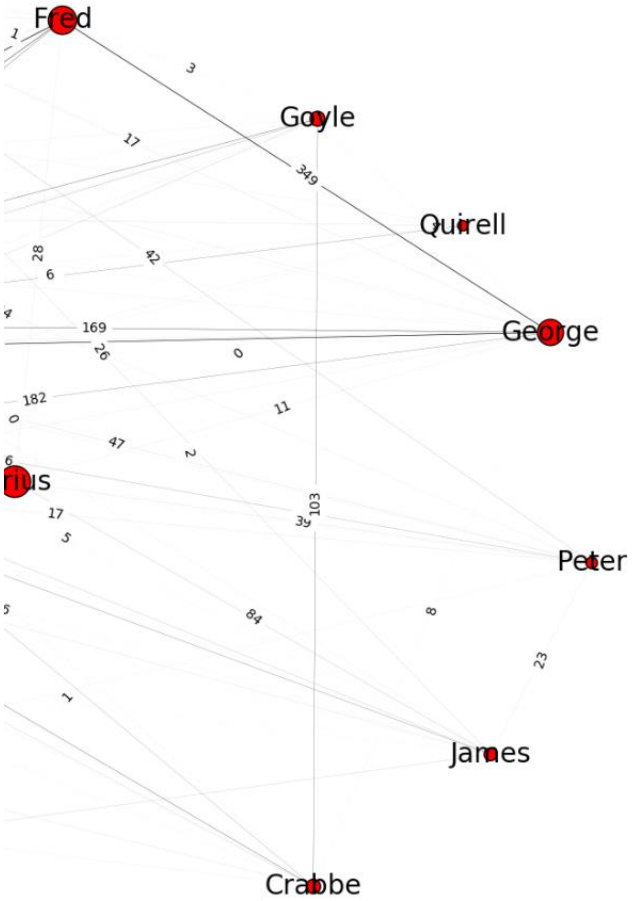


Main characters: Harry

The most important relationships: Harry-Hermione-Ron (the iron triangle)

Some important characters: Dumbledore, Voldermort, Snape, Hagrid, Sirius, etc.

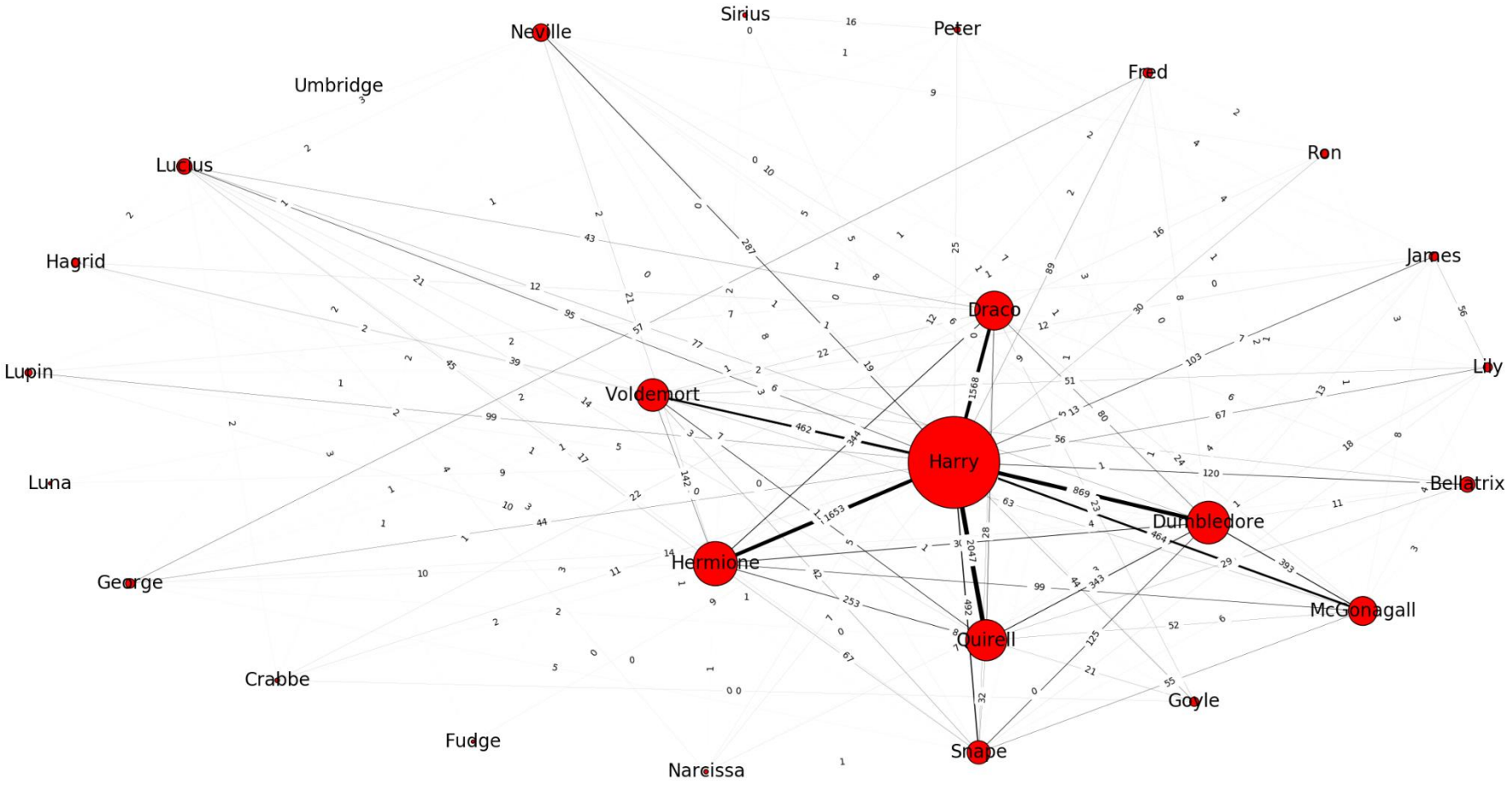
Analysis (cont.)



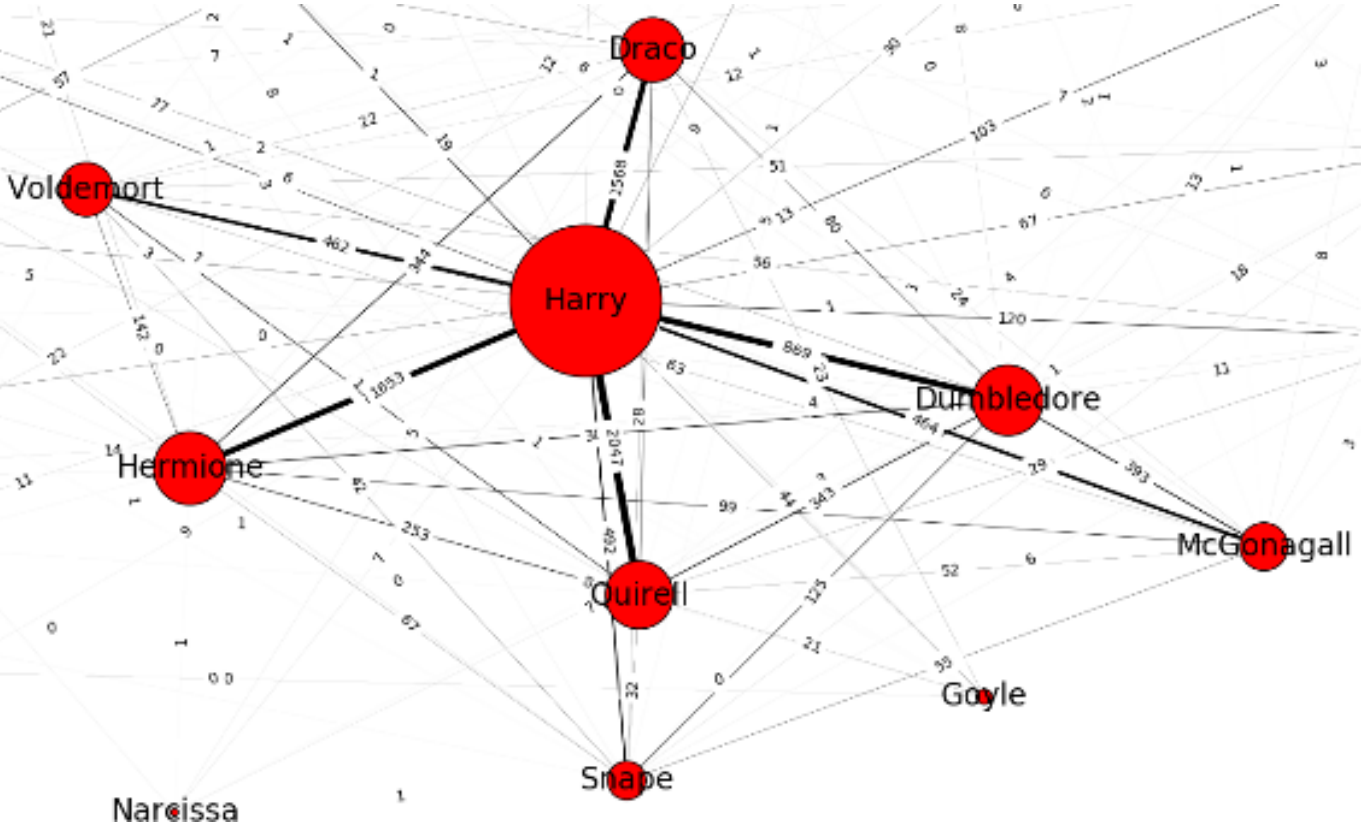
Some relationships between non-main characters:

- Fred-George (twins)
- Goyle-Crabbe (servitors of Draco)
- ……

Character Relationship Network Diagram in HPMOR



Analysis



Main characters: Harry

The most important relationships:

- Harry-Draco
- Harry-Hermione
- Harry-Quirell

(star VS triangle topology)

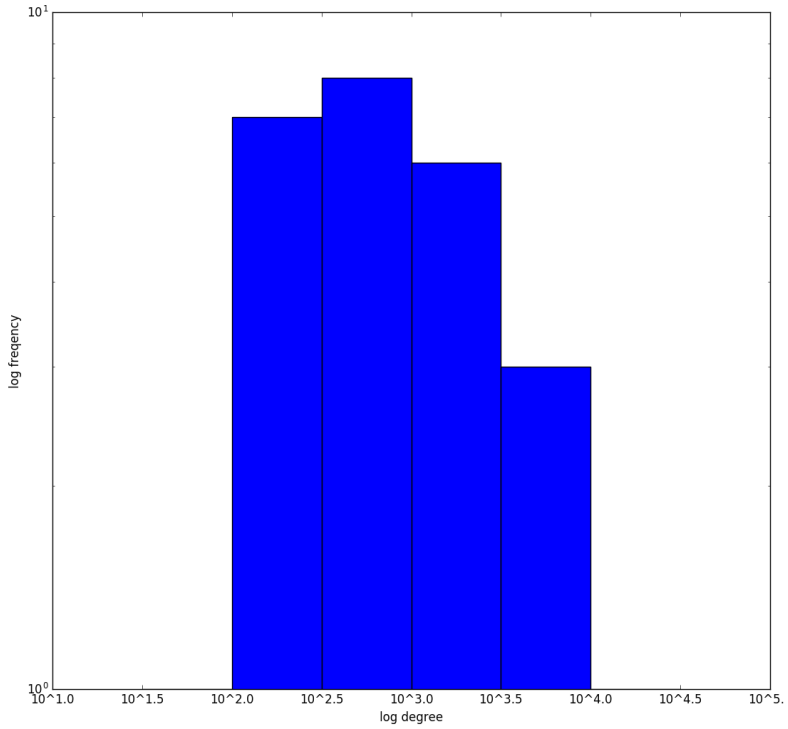
Some important characters: Dumbledore, Voldermort, Snape, McGonagall, etc.

Degree Distribution of Character Relationship Network

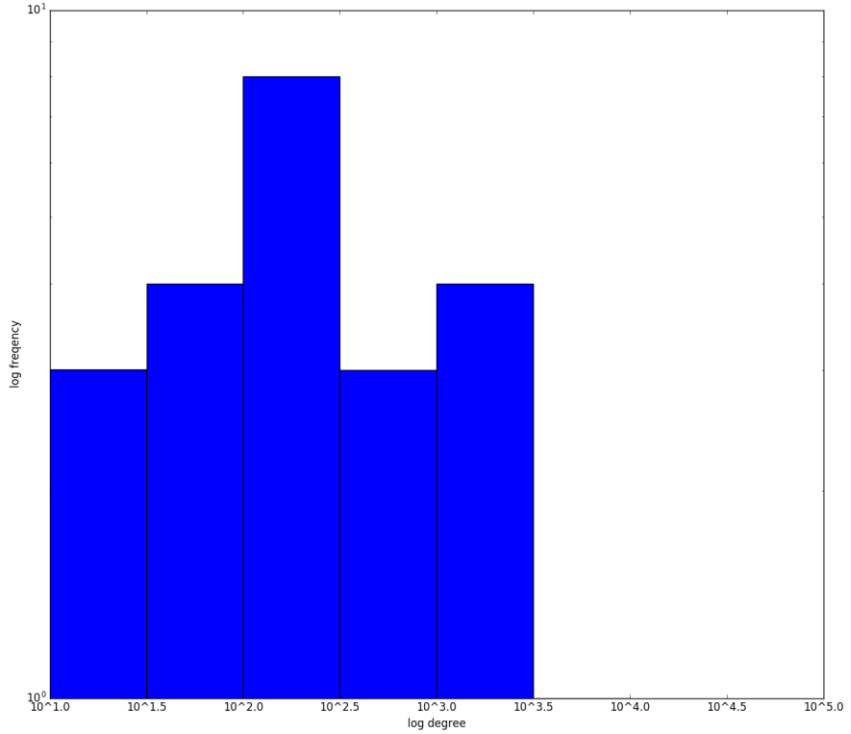
HP Series		HPMOR	
Name	**Degree**	**Name**	**Degree**
Harry	14688	Harry	5475
Ron	7388	Dumbledore	1828
Hermione	6741	Quirell	1687
Dumbledore	3463	Hermione	1557
Snape	2336	Draco	1319
Hagrid	2061	Voldemort	971
Voldemort	1598	McGonagall	909
Sirius	1259	Snape	591
Fred	1131	Lucius	248

Degree Distribution of Character Relationship Network

HP Series



HPMOR



X axis: log degree; Y axis: log frequency

Not so scale-free (amount of characters is limited, only 26)

Tools & References

Tools

- Python with re & numpy & networkx & matplotlib modules

References

- NetworkX documentation
  http://networkx.readthedocs.io/en/stable/index.html

Source Code:

https://github.com/snowkylin/complex_network_course

Thank you!

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