Open Science Platforms as Data Repositories for Automated Summarization

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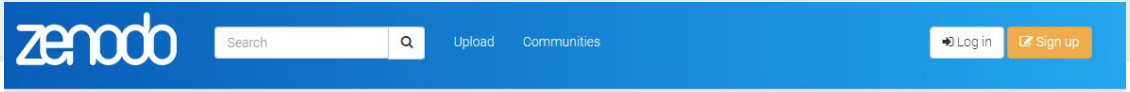
Introduction

- Open science platforms provide a wealth of information
  - Many topics
  - Many forms of content
- Search for relevant papers can be time consuming
- Keeping up with new content can be overwhelming
- Usage should be low-barrier



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Keywords

- [ ] Taxonomy (1144922)
- [ ] Biodiversity (1143912)
- [ ] Animalia (777274)
- [ ] Arthropoda (601339)
- [ ] Insecta (420944)
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- [ ] Terrestrial (270754)
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Key Questions

How to use automated summarization to improve usage and user experience of/on open science platforms?

Automated Summarization - Why?

- Time-saving for the pre-selection phase
- Cuts down on redundancy
- Highlight similarities and differences between papers
- Quick overview over research trends

Automatic Summarization

- Transformer-based models dramatically improved previous results
  - Seems to be the de facto standard in many cases now
- Much focus on news articles in research
  - Most common datasets are made up of them
  - Differ from scientific articles both in length and complexity
- Single-document summarization vs. multi-document summarization

Main requirements

- Selection of relevant text sources
- Extraction of key information
- Summarization for a specified distribution technology
- Personalisation through user specification

Concept I - Summaries as a newsletter

- An easier way of "keeping up to date"

- User specification:
  - Topics of interest through keywords, fields of science, etc.
  - Interval between newsletters
  - Length of summary
  - Communication channel

Concept I - Summaries as a newsletter

- Automatically select papers published
  - in the specified duration of time
  - that fit the chosen topic/field

- Summarize them, factoring in
  - the specified summary length
  - the intended communication channel

Concept II - Summaries a la carte

- If not only the most recent publications are of interest
- Select papers in a tool such as Collaboration spotting X[1]
- Summarize them according to number of selected papers
- Output shown after summarization

[1] Bobic, A., Le Goff, J. M., & Gütl, C. (2021). Collaboration Spotting X-A Visual Network Exploration Tool. In in Proceedings of the The Eighth International Conference on Social Networks Analysis, Management and Security: SNAMS 2021.

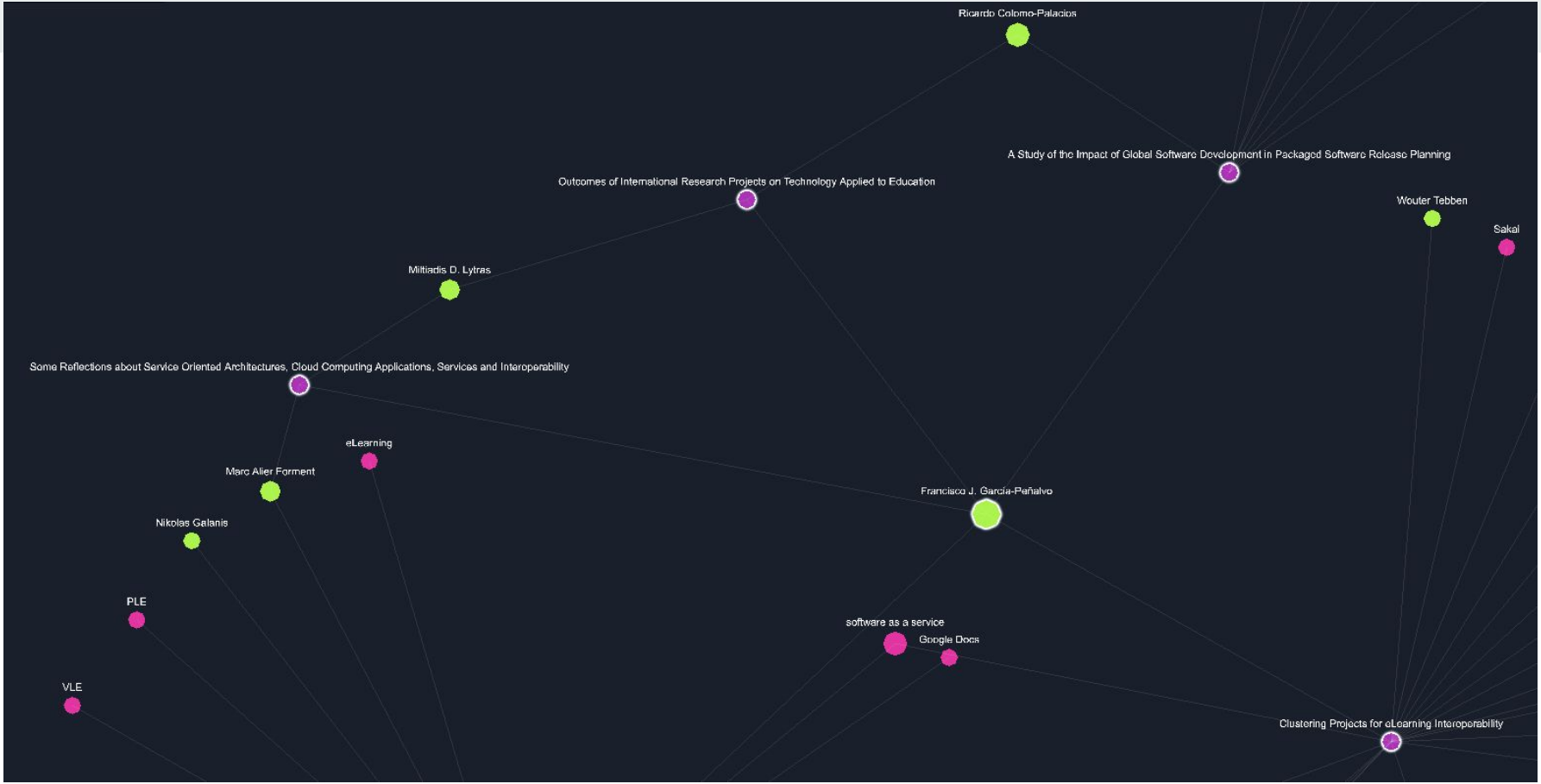

Figure 1. Bobic, A., Le Goff, J. M., & Gütl, C. (2021). Collaboration Spotting X-A Visual Network Exploration Tool. In in Proceedings of the The Eighth International Conference on Social Networks Analysis, Management and Security: SNAMS 2021.

Challenges - User Specification

- Granularity of topic selection
- Availability of topic information
- Given maximum length may render summary unusable

Challenges - Summarization

- Few and/or small datasets for summarization of multiple documents
  - Particularly so for scientific texts, such as papers
- Papers in some domains may be harder to summarize than others
- Staying true to the information in the paper - no "hallucination"

Conclusion

- Keeping up to date with research can be difficult and time consuming
- Regular summaries regarding recent publications are an attempt to reduce information overload
- Automatic summarization could help but presents challenges