Digital Prosopography of Renaissance Musicians

Discovery of Social and Professional Network

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Goals

- To create a social and professional network of Renaissance musicians
- To create a database to be able to study the network
- To make connections and discover relationships or answer questions related to dates, geographies, professions, etc.

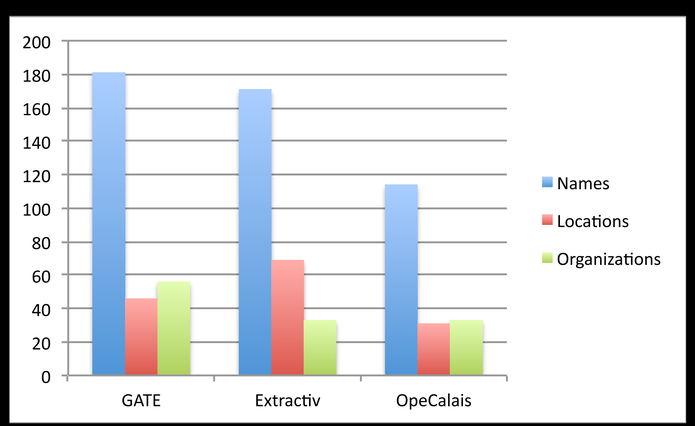
Example queries: Not easily answered by Google, Wikipedia, and other traditional methods

- Which music printers were in business in 1481 in Florence?
- Which composers were residing in Florence in 1481?
- Which composers visited Florence in 1481?
- Which trumpeters were active in Florence between 1481–86?
- What events took place in 1481 in Florence that required musical performance?
- What pieces requiring trumpets were performed in Florence in December 1481?

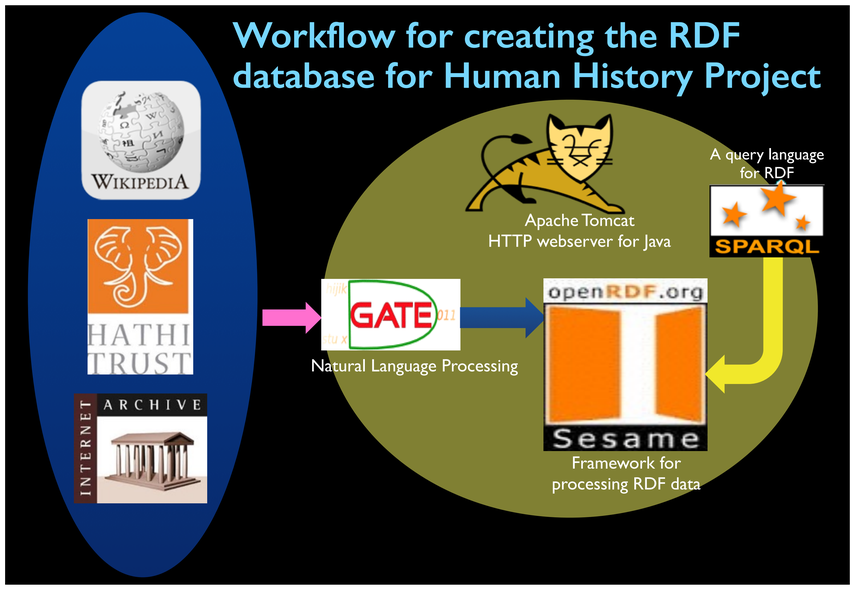
Solutions: Three major tools

- Natural Language Processing (NLP)
  - Named-entity extraction
  - Events extraction
- Linked Open Data
  - RDF (Resource Description Framework): a data model
  - SPARQL: a query language for RDF
- Crowdsourcing

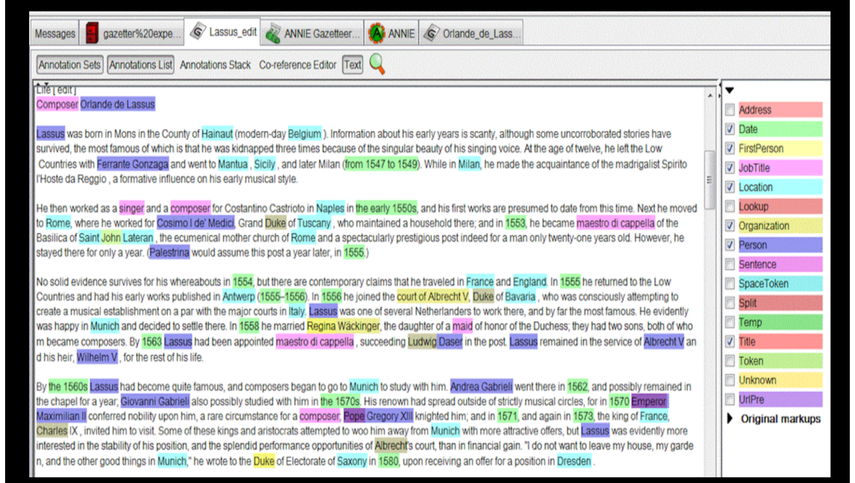
Comparison of Named-Entity Extractors



Workflow for creating the RDF database for Human History Project



An example of named-entity extraction by GATE



Named-entity extraction: Experiment I

- Four Renaissance composers' entries in Wikipedia
- Using the default Gazetteer (a dictionary)
  - 90.25% precision (the extracted entities were correctly identified)
  - 65.33% recall (the entities in the document that were found)
- Editing the Gazetteer (~15 minutes / article)
  - 98.39% precision; 91.86% recall
- Fixing the problem with plurals with the Morphological Analyzer (finding root form of words)
  - 98.45% precision; 98.45% recall

Named-entity extraction: Experiment II

- Ten composers x three sources (30) minus the four Wikipedia articles from Experiment 1: 26 articles
- Using the modified Gazetteer and Morphological Analyzer from Experiment 1
  - 99.24% precision; 98.9% recall
- Correction time of the 5,441 entities extracted
  - Average of 3 sec./entity to correct
  - 240 min. to correct 26 articles or about 10 min. / article

Next steps

- Extract relationships between named entities (e.g., REEL)
- Create web interface to correct relationships
- Create web interface to query the network of relationships

Acknowledgements

We would like to acknowledge the wonderful work by Christopher Buchanan on this project. Other team members include: Haoyuan Ji, Peng Jianxiang, Ankit Sarwal, and Chengyuan Zhang. This research has been supported by the NEH Digital Humanities Start-up Grant and the Social Sciences and Humanities Research Council of Canada.

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