Miology: a Web Application for Organizing Personal Domain Ontologies

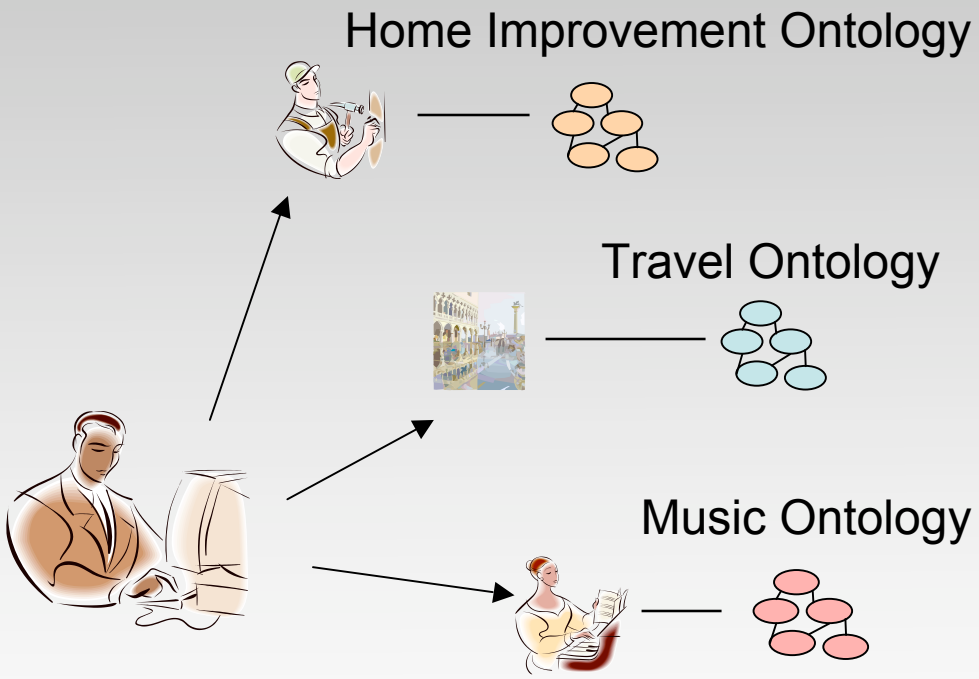
Mirco Speretta and **Prof. Susan Gauch**
CSCE Department
University of Arkansas
USA

Motivations

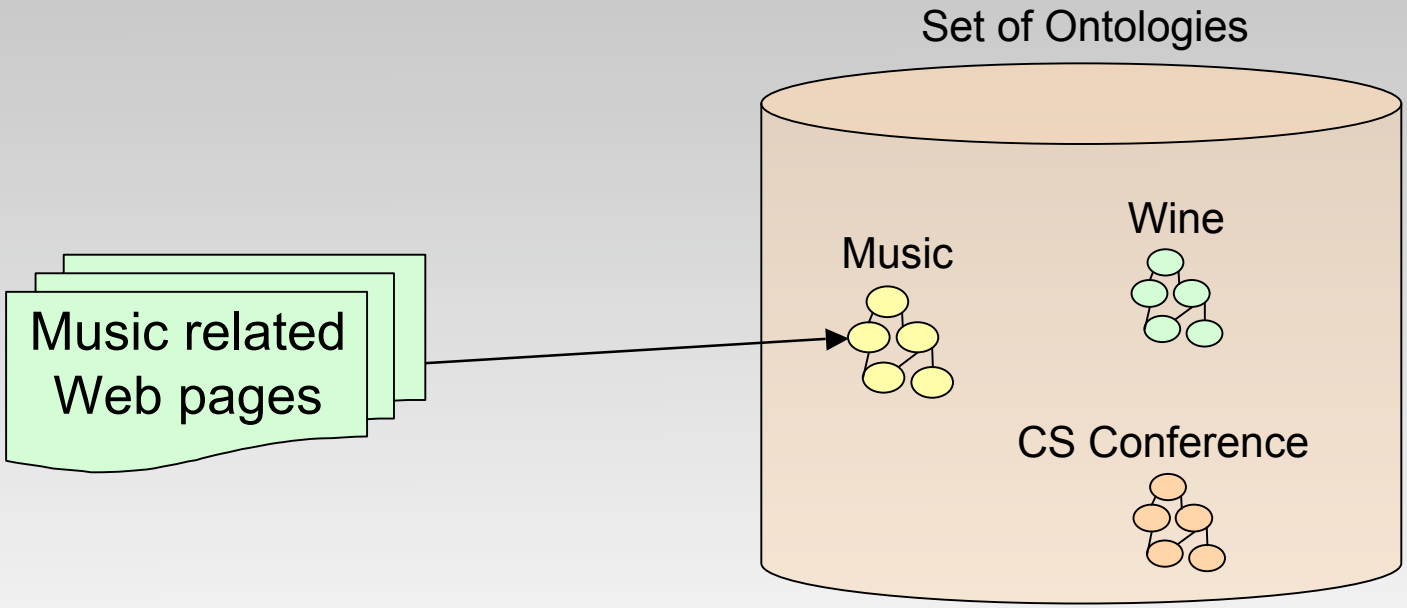
- Users organize **personal interests by topic**
- **Ontology** represents the most flexible method to **model knowledge**
- Increasing interest in the Semantic Web => **growing number of ontologies**
- **Lack** of **automatic tools** for building and maintaining ontologies

Goal

Develop a **Web based application** that uses **automatic techniques** to select and adapt **domain ontologies** representing **users' interests**.



Study 1

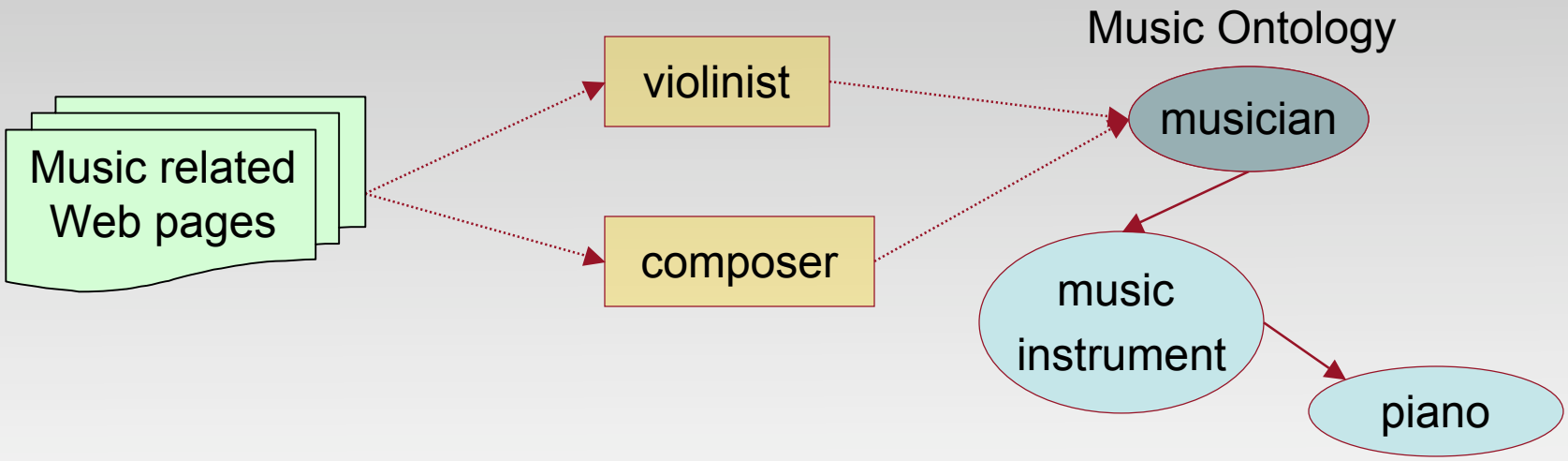


*"**Automatic Ontology Identification for Reuse**", Mirco Speretta and Susan Gauch, In the Proceedings of the 2007 IEEE/WIC/ACM International Conference on Web Intelligence (WI'07), San Jose, California, USA*

Study 1

- We introduced an **ontology match score** based on **statistical techniques**
- Our method was tested on
  - set of 183 publicly available domain ontologies
  - 200 documents representing ten different domains
- With the **best settings** our algorithm was able to select the correct domain ontology as the top in the rank **8 out of 10 times**

Study 2

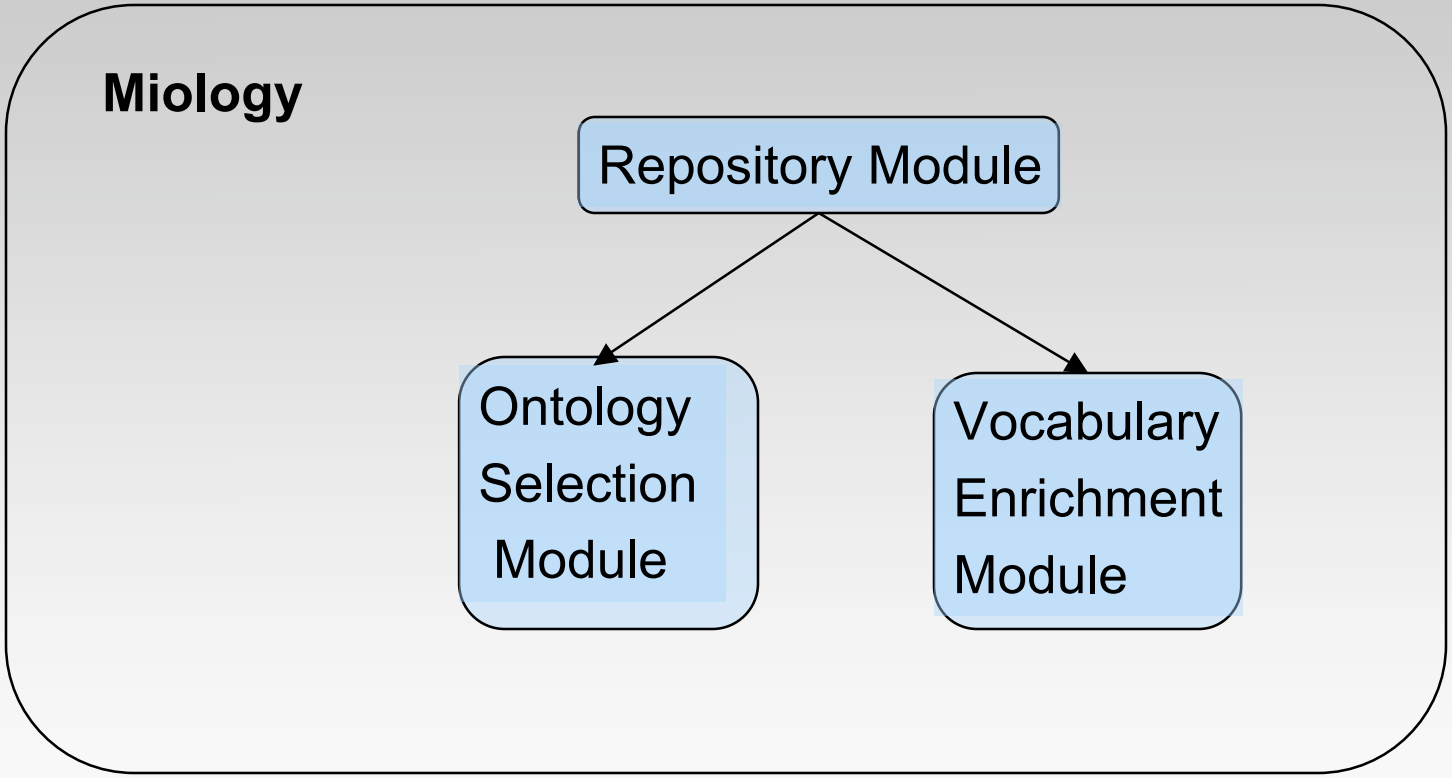


*"**Using Text Mining to Enrich the Vocabulary of Domain Ontologies**", Mirco Speretta and Susan Gauch, 2008 IEEE/WIC/ACM International Conference on Web Intelligence (WI'08), Sydney, Australia*

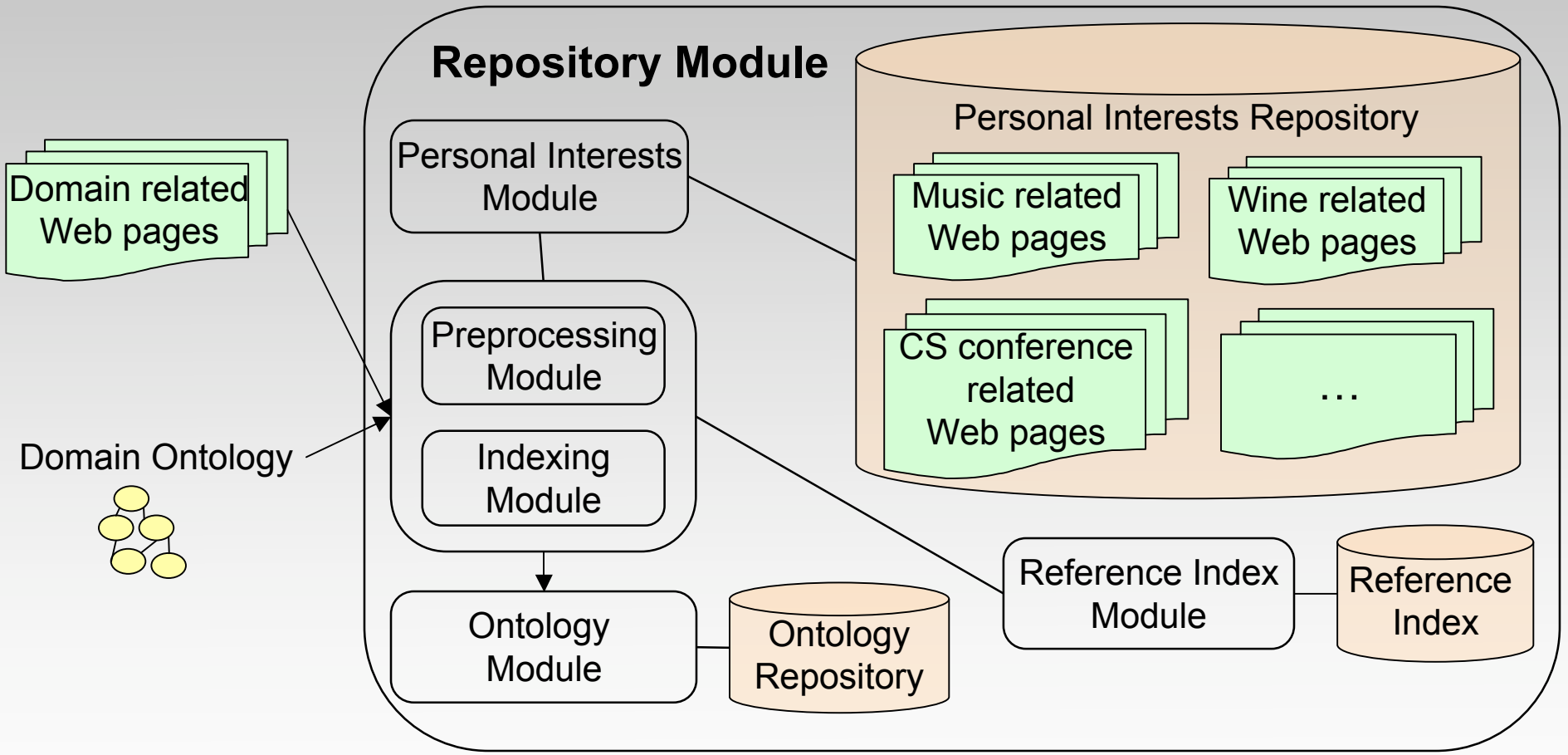
Study 2

- New candidate words mined from the given set of Web pages
- In the best case
  - Initial ontology of 42 concept-words was enriched with 24 new words
  - Enriched ontology with 66 concept-words in 33 concepts
  - Human judge evaluated the semantic-relatedness between the new words and the corresponding concept-word:
    - 34.7% “very related”, 24.6% “somewhat related”,40.7% “not related”

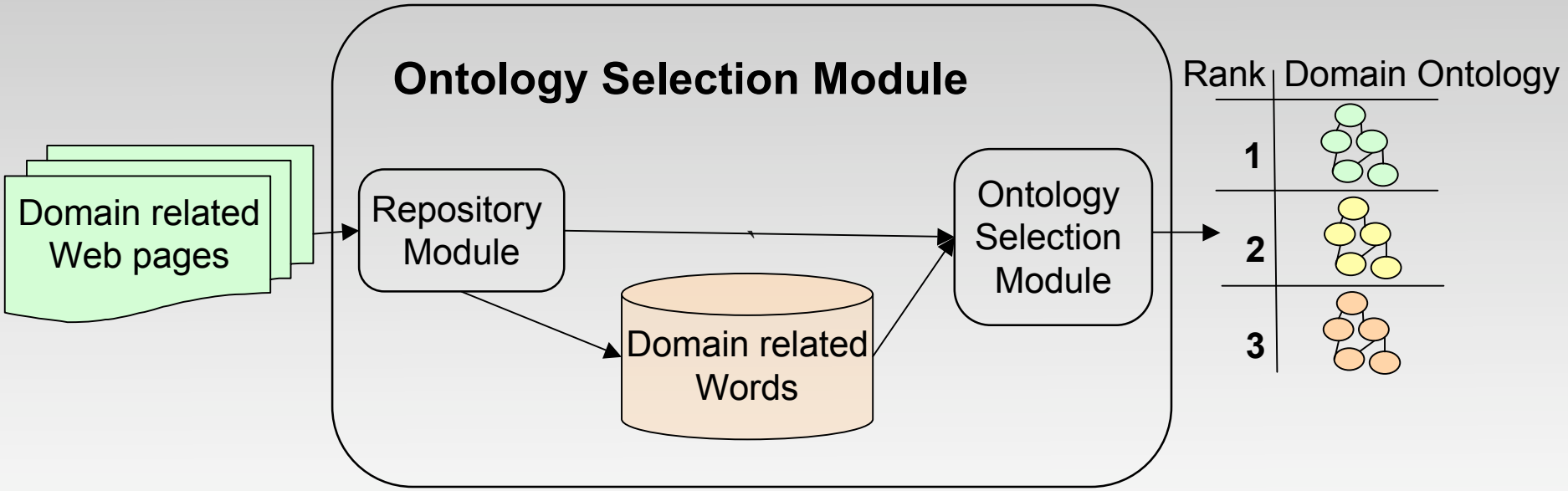
Architecture



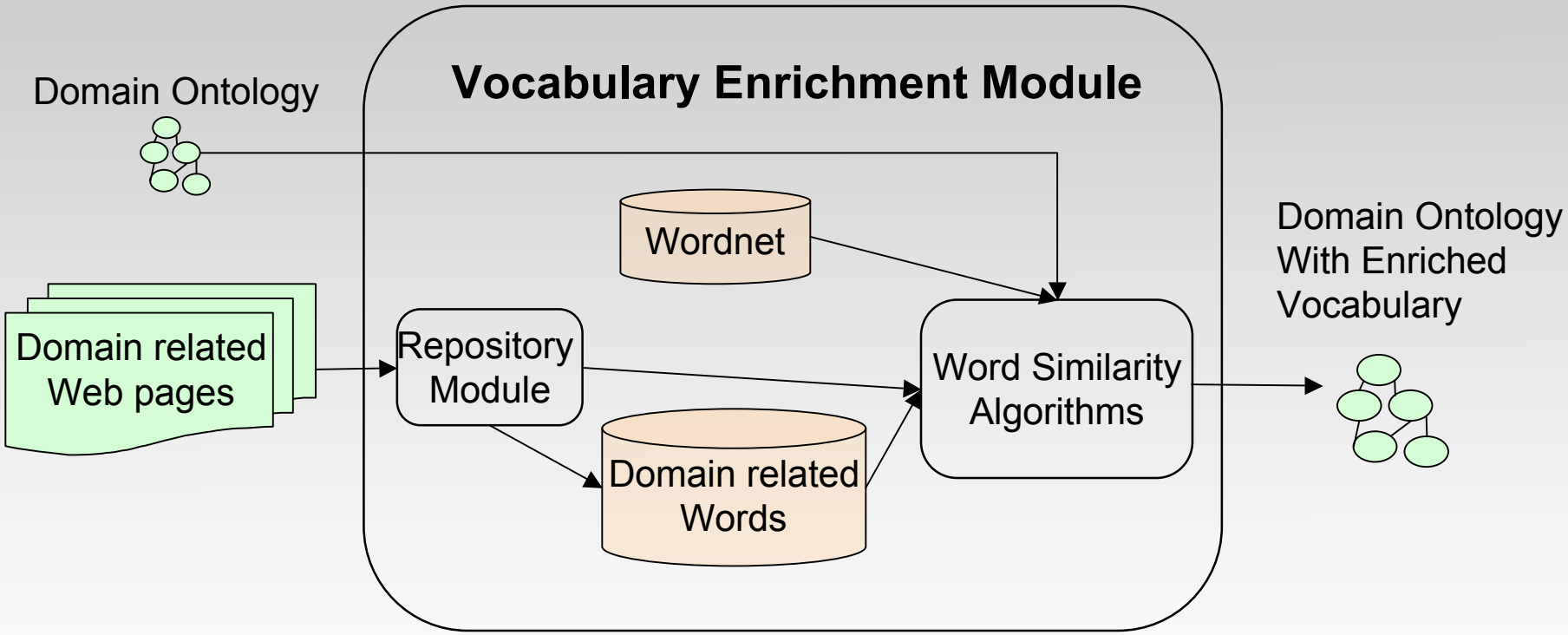
Architecture (cont'd)



Architecture (cont'd)



Architecture (cont'd)



Conclusions and Future Work

- **Miology** is a Web based system that allows users to **organize** their **personal interests** with **domain ontologies**
- Advantages
  - based on **automatic techniques**
  - possibility of **generating ontologies on the fly**

- The system could be **expanded** and **improved**
  - considering a **wider range of relations**
  - introduce automatic techniques to **modify the structure** of the ontology
  - allowing the user to **manually update** both the **vocabulary** and the **structure** of the ontology

Mirco Speretta
msperett@uark.edu

Prof. Susan Gauch
sgauch@uark.edu

CSCE Department
University of Arkansas
USA