Semantic Web Course Research Topics

The research topics, which can be chosen by students, are but not limited as follows:

- **Ontology Alignment (Ontology Matching)**

Two parties may develop separate Ontologies which talks about similar things. Then an agent wants to be able to process and find similar data in two sites should be able to draw correspondence between entities of two or more ontologies. The problem is how an agent should do such matching.

- **Ontology Integration**

Having some ontologies the aim is to build a new onotolgy, which integrates the existing ontologies. Ontology alignment (matching) techniques can be used here, but other mechanism is needed to build appropriate structure for the integrated ontology.

- **Semantic Web Services**

Web service is a technology deployed on the web which can be located and called on the web. However, human should interfere in every step of locating and usage of web services, because web service descriptions in traditional forms do not contain semantics. With semantic web services, we hope that by adding semantics to the descriptions, we may delegate some of the human works to machines. These involve web service discovery and composition.

- **Reasoning and Inference Techniques for SW Languages**

There are some standard reasoning tasks for Ontology languages (e.g. Subsumption). However, some other forms of reasoning are needed for many applications.

- **Extensions of Description Logics**

Description logic is a family of logics. Based on the requirements developed in different computing environments, different types of DLs are developed. Adding modal operators, rules, etc. to the existing DLs or combining them with other types of logics are topics which are considered in recent years.

- **Security and Trust Models for Semantic Web**

Security of data, metadata, and services provided on the web as well as trust management in this environment are complicated issues in semantic web in comparison with the current web. Security mechanisms provided for semantic web (or more generally in semantic-aware environments) as well as formal models for trust management and authorization are interested research issues in this field.
- Applications of Semantic Technology

Semantic technology has been used in different environments (semantic grid, semantic cloud, ...) and different applications (semantic social networks, semantic virtual organizations,...). The usage of semantic technology for solving the problems arises in other applications and environments are the research issues, which can be considered.

- Semantic Web Mining

Web mining helps to find new patterns and knowledge from the web information. Semantic Web Mining can be used to find semantic patterns or use the semantics to guide mining for better knowledge extraction from the web.

- Other Related Topics

You can choose other related topics by taking permission from TA or the Instructor of the course.

Important Dates:

Research proposal: 91-1-20

First report (containing the survey): 91-02-18

Final report (in form of a paper): 91-03-01

Paper presentation: Last 2 or 3 sessions of the class