

**CS6795**

**Semantic Web Techniques**

**Project Proposal**

**Visualizing and Running an XML-based  
Computer Science Taxonomy**

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## Overview

### Proposed Work

Use ACM Computing Classification System (1998) to construct our own XML-based Computer Science taxonomy. Use XSLT stylesheet of our XML repository to generate an RDFS version. Visualize our RDFS taxonomy via FRODO RDFSviz.

Use another XSLT stylesheet of that URL to generate normal, unextended RuleML rules from our XML taxonomy. Add some RuleML facts applying classes, as unary predicates, to individual constants representing Web pages (as URLs or just as unique names), for the Computer Science taxonomy marking up, e.g., games (<http://www.xs4all.nl/~verhelst/chess/programming.html>) or games (verhelst-chess-programming). Read the RuleML into jDREW and run at least one query (top-down or bottom-up, as appropriate) that 'traverses' the entire taxonomy. Document and discuss all the results; indicate possible further extensions.

### What are the characteristics of an ideal solution to problems in this area?

- (1) Platform Independence
- (2) Smooth connection among modules
- (3) Filtering redundant information

### What extensions to the tool might be worth considering?

We get some similar information from other taxonomy web sources, and use the combined taxonomy via the jDREW tool, in order to obtain the new desired facts according to already achieved facts as well as the inheritance rules.

## Background

1. **Taxonomy you are using:** Computer Science Taxonomy
2. **XML:** eXtensible Markup Language
3. **RuleML:** the Rule Markup Language
  - a) Taxonomic RuleML
  - b) Normal, Unextended RuleML
4. **XSLT** (Extensible Style Sheet Language): a rule-based transformation language for XML documents/trees.
5. **RDF:** Resource Description Framework
6. **FRODO RDFSviz:** Visualize RDF taxonomy
7. **jDREW:** the Java Deductive Reasoning Engine for the Web

## Team and Work division

We divide the whole project into three parts:

- 1) Construct XML-based Computer Science taxonomy. Use XSLT stylesheet to translate the XML repository to Taxonomic RuleML.
- 2) Use other XSLT stylesheet to translate the Taxonomic RuleML to an RDFS version. Visualize our RDFS taxonomy via FRODO RDFSviz.
- 3) Use another XSLT stylesheet to translate the Taxonomic RuleML to a Normal, Unextended RuleML, and read the RuleML into jDREW and run.

Bo Xu takes the first part. Han Liang takes the second. Jie Li and Jing Jin are responsible for the third part. Everyone will join the assembling and testing, and also the final presentation and final report.

## References

- [1] Grigoris Antoniou, Frank van Harmelen. A Semantic Web Primer. MIT Press. April 2004.
- [2] A Java Deductive Reasoning Engine for the Web  
<http://www.jdrew.org/jDREWebsite/jDREW.html>
- [3] ACM Computing Classification System (1998)  
<http://www.acm.org/class/1998/overview.html>
- [4] Spencer, Bruce. The Design of j-DREW: a Deductive Reasoning Engine for the Semantic Web. <http://www.cs.unb.ca/~bspencer/dagstuhl-jdrew.pdf>
- [5] Taxonomic RuleML Extension in XML <http://www.dfki.uni-kl.de/ruleml/insub>
- [6] XML-based Taxonomy OntoTherm for Heating Design  
<http://www.dfki.uni-kl.de/~boley/ontotherm/>
- [7] FRODO RDFSviz <http://www.dfki.uni-kl.de/frodo/RDFSviz/>
- [8] jDREW <http://www.cs.unb.ca/~bspencer/cs6795swt/j-DREW.zip>