



**Department of Mathematics, Statistics and Computer Science  
St. Francis Xavier University**

**presents**

**Parallel Inconsistency-tolerant Description Logic Reasoning**

**by**

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**M.Sc. Thesis Proposal Presentation**

**Monday, November 3<sup>rd</sup> @ 2:15pm in Annex 23A**

The Web Ontology Language (OWL) is a family of knowledge representation languages for authoring ontologies in Semantic Web (SW) applications. OWL is based on description logics and automated reasoners are used to make the knowledge explicit that is implicitly presented in OWL ontologies. As the SW environment is open and constantly changing, inconsistency becomes inevitable in the design and development of ontology. However, classical description logics fail to perform reasoning over inconsistent ontologies due to obeying the classical principal of explosion. As a result, the approaches to handle inconsistent knowledge in DLs has received extensive interest in the community. Furthermore, achieving practical scalability via parallelization in tableau based reasoning is still an open problem.

In this research, we studied the way of dealing with inconsistency in OWL ontology. After a rigorous exploration of existing inconsistency-tolerant semantics we have decided that quasi-classical description logic (extended from QC logic) is most suited to handle inconsistency due to its strong inference power. Though the theoretical research has improved significantly and recently proposed tableau based reasoning algorithm is sound and complete, practical implementation has not been done yet. We have proposed a system description of an efficient tableau based inconsistency-tolerant reasoner named QCOWL. We will implement QCOWL and also investigate the potential of improving performance via parallelization in different non-deterministic and independent tableau branches.