Ph.D. Previsional Plan

Antoine Gréa

All dates are given only as an indication and are not subject to formal commitment.

Abstract

Acknowledgements

Introduction

- After all chapters done
- **2 weeks**
- Due *2019-03-22*
- Corrected *2019-03-29*
- Jury selected *2019-04-05*

0.1. Thesis Context

0.2. Motivations

0.2.1. Observation

0.2.2. Abstraction

0.2.3. Cognition

0.3. Issues

0.4. Contributions

0.5. Plan

1. Knowledge Representation

- **3 weeks**
- Due *2019-01-04*
- **Delivered** *2019-01-05*
- Correction *2019-01-11* (postponed)

1.1. Fundamentals

1.1.1. Foundation of maths and logic systems

1.1.1.1. First Order Logic.

1.1.1.2. Set Theory.

1.1.1.3. Graphs.

1.1.1.4. Hypergraphs.

1.1.1.5. Sheaf.

1.1.2. Grammar and Parsing
1.1.2.1. BNF.

1.1.2.2. Dynamic Grammar.

1.1.2.3. Description Logics.

1.1.3. Ontologies and their Languages
1.2. Self
1.2.1. Knowledge Structure
1.2.1.1. Consequences.

1.2.1.2. Native properties.

1.2.2. Syntax
1.2.3. Dynamic Grammar
1.2.3.1. Containers.

1.2.3.2. Parameters.

1.2.3.3. Operators.

1.2.4. Contextual Interpretation
1.2.4.1. Naming and Scope.

1.2.4.2. Instanciation identification.

1.2.5. Structure as a Definition
1.2.5.1. Quantifiers.

1.2.5.2. Inferring Native Properties.

1.2.5.3. Extended Inference Mechanisms.

1.2.5.4. Type Inference.

1.2.5.5. Instanciation.

1.3. Perspectives

1.3.1. Literal definition using Peano's axioms

1.3.2. Advanced Inference

1.3.3. Queries

2. General Planning Framework

- **4 weeks**
- Due *2019-01-30*
- Addressing issues with chapter 1 and 2 *2019-02-06*
- Both corrected *2019-02-14*

2.1. Classical Formalisms

2.1.1. State-transition planning

2.2. General Formalism

2.3. Existing Languages and Frameworks

2.3.1. Classical

2.3.2. Temporality oriented

2.3.2.1. PDDL+.

2.3.3. Probabilistic

2.3.3.1. PPDDL.

2.3.3.2. RDDL.

2.3.4. Multi-agent

2.3.4.1. MAPL.

2.3.4.2. MA-PDDL.

2.3.5. Hierarchical

2.3.5.1. UMCP.

2.3.5.2. SHOP2.

2.3.5.3. HDDL.

2.3.5.4. HPDDL.

2.3.6. Ontological

2.3.6.1. WebPDDL.

2.3.6.2. OPT.

2.4. Color and general planning representation

3. Online and Flexible Planning Algorithms

- **3 weeks** + 10 half days of teachings
- Due *2019-03-08*
- Corrected *2019-03-15*

3.1. Existing Algorithms

3.2. Lollipop

3.2.1. Operator Graph

3.2.2. Negative Refinements

3.2.3. Usefullness Heuristic

3.2.4. Algorithm

3.2.5. Theoretical and Empirical Results

3.3. HEART

3.3.1. Domain Compilation

3.3.2. Abstraction in POP

3.3.3. Planning in cycle

3.3.4. Properties of Abstract Planning

3.3.5. Computational Profile

3.4. Planning Improvements

3.4.1. Heuristics using Semantics

3.4.2. Macro-Action learning

3.5. Recognition

3.5.1. Existing approcahes

3.5.2. Rico

3.5.2.1. Probabilities and approximations.

Conclusion

- Finalisation + Formating + Corrections
- **2 weeks**
- Due *2019-04-02*
- Corrected *2019-04-05*
- Last refinements and printing *2019-04-12*

Apendix

References