

An Introduction to SNePS

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Contents

1	SNePS 2.6	2
1.1	Overview	2
1.2	Atomic Formulas in SNePSLOG	2
1.2.1	Simple Assertions	2
1.2.2	Simple Queries: ? and askwh	2
1.2.3	Functional Terms and Conjunctive Queries	2
1.2.4	Reified Propositions	2
1.2.5	expert and normal Modes	3
1.2.6	Unique Names Assumption and Uniqueness Principle	3
1.3	Reduction Inference	3
1.4	Symmetric Arguments	3
1.5	Negation	3
1.5.1	Negated Formulas as Assertions	3
1.5.2	Querying: ?, ask, askifnot, askwh, askwhnot	3
1.6	Nodes, Case Frames, and Cablesets	3
1.6.1	show	3
1.6.2	Atomic and Molecular Nodes	3
1.6.3	Case Frames and Cablesets	3
1.7	Handling Contradictions, Part I	3
1.8	Mode 3 and Path-Based Inference	3
1.8.1	Mode 3 and define-frame	3
1.8.2	Path-Based Inference	3
1.9	Node-Based Inference	4
1.9.1	Simple Implication, Forward and Backward Inference	4
1.9.2	Universal Quantification, ? vs. ??	4
1.9.3	Bi-Directional Inference	4
1.9.4	Lemmas: Retaining Derived Information	4
1.9.5	AndOr	4
1.9.6	Thresh	4
1.9.7	Or-Entailment	4
1.9.8	And-Entailment	4
1.9.9	Numerical Entailment	4
1.9.10	The Numerical Quantifier	4

1.9.11 Hypotheses vs. Derived Propositions	5
1.10 Contexts	5
1.11 SNeBR: Handling Contradictions, Part II	5
1.12 SNeRE: The SNePS Acting Language	5
2 SNePS 3	5
2.1 Syntactic Types	5
2.2 Semantic Types	5
2.3 Relations	5
2.4 Case Frames	5
2.5 Arbitrary and Indefinite Entities	5
2.6 Categorizations	5
2.7 Wire-Based Inference	5
2.8 Path-Based Inference	5
2.9 Subsumption Inference	5
2.10 Node-Based Inference	5

1 SNePS 2.6

1.1 Overview

- A knowledge representation, reasoning, and acting system.
- Approximately 30 years of development.
- 64 people involved in its development.
- Academic, not “productized”, system.
- Constantly being improved: suggestions and help appreciated.
- Implementation language: ANSI Common Lisp.
- Logic-based and Network-based.
- Interfaces: SNePSUL; SNePSLOG; Fragments of English.

1.2 Atomic Formulas in SNePSLOG

1.2.1 Simple Assertions

Demo: `assertions.snepslog`

1.2.2 Simple Queries: ? and askwh

Demo: `queries.snepslog`

1.2.3 Functional Terms and Conjunctive Queries

Demo: `functions.snepslog`

1.2.4 Reified Propositions

Demo: `reified.snepslog`

1.2.5 expert and normal Modes

Demo: `expert.snepslog`

1.2.6 Unique Names Assumption and Uniqueness Principle

Demo: `unique.snepslog`

1.3 Reduction Inference

Demo: `reduction.snepslog`

1.4 Symmetric Arguments

Demo: `symmetric.snepslog`

1.5 Negation

1.5.1 Negated Formulas as Assertions

Demo: `negation.snepslog`

1.5.2 Querying: ?, ask, askifnot, askwh, askwhnot

Demo: `asknegation.snepslog`

1.6 Nodes, Case Frames, and Cablesets

1.6.1 show

Demo: `nodes.snepslog`

1.6.2 Atomic and Molecular Nodes

See the examples in the diagrams produced by `show`.

1.6.3 Case Frames and Cablesets

See the examples in the diagrams produced by `show`.

1.7 Handling Contradictions, Part I

Demo: `contradictions1.snepslog`

1.8 Mode 3 and Path-Based Inference

1.8.1 Mode 3 and define-frame

Demo: `mode3.snepslog`

1.8.2 Path-Based Inference

Demo: `pb-inf.snepslog`

1.9 Node-Based Inference

1.9.1 Simple Implication, Forward and Backward Inference

Demo: `implication.snepslog`

1.9.2 Universal Quantification, ? vs. ??

Demo: `quantify.snepslog`

1.9.3 Bi-Directional Inference

Demo: `bidir.snepslog`

1.9.4 Lemmas: Retaining Derived Information

Demo: `lemmas.snepslog`

1.9.5 AndOr

Demo: `andor.snepslog`

1.9.6 Thresh

Demo: `thresh.snepslog`

1.9.7 Or-Entailment

Demo: `orEntailment.snepslog`

1.9.8 And-Entailment

Demo: `andEntailment.snepslog` illustrates:

- three ways of expressing conjoined antecedents;
- deleting a wff from the current context;
- the ATMS disbelieving implications derived from disbelieved hypotheses;
- the triggering of backward inference from forward inference;
- and the Unique Variable Binding Rule (UVBR).

1.9.9 Numerical Entailment

1.9.10 The Numerical Quantifier

Demo: `numQuant.snepslog`

1.9.11 Hypotheses vs. Derived Propositions

1.10 Contexts

1.11 SNeBR: Handling Contradictions, Part II

1.12 SNeRE: The SNePS Acting Language

2 SNePS 3

Demo: #3, Contexts and #7, Chng

2.1 Syntactic Types

2.2 Semantic Types

2.3 Relations

2.4 Case Frames

2.5 Arbitrary and Indefinite Entities

2.6 Categorizations

2.7 Wire-Based Inference

2.8 Path-Based Inference

2.9 Subsumption Inference

2.10 Node-Based Inference

References