The Technical Specification for Arrow Concepts

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Abstract

This paper will approach the Arrow philosophy constructively, using only formal terms and theories. It is intended that this should provide the best basis for an implementation strategy for the Arrow system.

Contents

1 Introduction

The arrow system architecture takes the best from the reflective theories of mathematics, computer science, and knowledge systems, integrating them into a new unified system. This new formalization has unique motives and strives for a minimal complexity from this new perspective.

The reader should only need a minimal base knowledge in formal logic, mathematics, and computer science in order to follow the arguments in this document.

2 Source Domains

Current and on-going developments in many domains assist in making Arrow concepts more accessible to the general reader, and so these will be reviewed in their basic conceptual form.

2.1 Programmatic Reflection in Computer Science

foo

2.2 Mathematical Reflection via Model Theory and Category Theory

foo

2.3 Reflection in Knowledge Systems via Ontologies

foo

2.4 Information Theory and Cybernetics

foo

3 The Arrow Motivation

3.1 A Protocol for Sharing Information

foo

3.2 Bridging the Gaps in the Computing Fields

foo

4 The Basic Arrow Formalisms

4.1 Referential Structure

foo

4.2 Arrow Graphs

Definition foo

foo

4.3 Uses of Arrows and Graphs

foo

4.4 Abuses of Arrows and Graphs

foo

4.5 Why a New Foundation for Arrow

foo

5 Extending the Source Domains for Arrow

5.1 The Limits of Programmatic Reflection

foo

5.2 The Limits of Mathematical (Formal) Models and Categories

foo

5.3 Why Information and Knowledge Systems?

foo

6 An Arrow-Centric Foundation

6.1 Arrow Graphs as Set-Theoretic Structures

foo

6.2 Arrow Graphs as (Multi-)Modal Structures

foo (be sure to introduce modal logic either here, possibly building up to this in 2.2 and 4.2)

6.3 Arrow Graphs for Model Formalization

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7 Conclusion

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