

1. Record Nr.	UNINA9910784649503321
Autore	Mueller Erik T
Titolo	Commonsense reasoning [[electronic resource] /] / Erik T. Mueller
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Elsevier Morgan Kaufmann, c2006
ISBN	1-281-05049-0 9786611050498 0-08-047661-9
Edizione	[1st edition]
Descrizione fisica	1 online resource (431 p.)
Disciplina	153.4/3
Soggetti	Commonsense reasoning - Automation Artificial intelligence - Mathematics Logic, Symbolic and mathematical - Data processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 361-390) and index.
Nota di contenuto	Front cover; About the Author; Title page; Copyright page; Table of contents; Foreword; Preface; Why Commonsense Reasoning?; Approach; Intended Audience; Roadmap; Material Covered; Supplemental Materials; Web Site and Reasoning Programs; Exercises and Solutions; Text and Figure Acknowledgments; Acknowledgments; 1 Introduction; What Is Commonsense Reasoning?; Key Issues of Commonsense Reasoning; Summary; Brief History of Commonsense Reasoning; Logical Methods; Nonlogical Methods; The Event Calculus; Events, Fluents, and Timepoints; A Simple Example; Automated Event Calculus Reasoning Bibliographic NotesPart I Foundations; 2 The Event Calculus; First-Order Logic; Syntax of First-Order Logic; Semantics of First-Order Logic; Proof Theory; Many-Sorted First-Order Logic; Notational Conventions; Event Calculus Basics; Event Calculus Sorts; Event Calculus Predicates; States of a Fluent; Event Calculus Axiomatizations; The (Continuous) Event Calculus; The Discrete Event Calculus; Choosing between the Event Calculus and the Discrete Event Calculus; Reification; Unique Names Axioms; Conditions; Circumscription; Computing Circumscription; Example: Circumscription of Happens Example: Circumscription of InitiatesDomain Descriptions; Example: Sleep; Inconsistency; Reasoning Types; Deduction and Temporal

Projection; Abduction and Planning; Example: Sleep Abduction; Postdiction; Model Finding; Bibliographic Notes; Exercises; Part II Commonsense Phenomena; 3 The Effects of Events; Positive and Negative Effect Axioms; Example: Telephone; Effect Axiom Idioms; Preconditions; Fluent Preconditions; Action Preconditions; Example: Walking through a Door; State Constraints; Example: Telephone Revisited; Bibliographic Notes; Exercises; 4 The Triggering of Events Trigger Axioms Example: Alarm Clock; Preventing Repeated Triggering; Example: Bank Account Service Fee; Triggered Fluents; Bibliographic Notes; Exercises; 5 The Commonsense Law of Inertia; Representation of the Commonsense Law of Inertia; Frame Problem; Classical Frame Axioms; Explanation Closure Axioms; Minimizing Event Occurrences; Introduction of Initiates Predicate; Minimizing Event Effects; Introduction of Terminates Predicate; Discussion; Representing Release from the Commonsense Law of Inertia; Example: Yale Shooting Scenario; Releasing from Inertia; Restoring Inertia Explanation Closure Axioms for ReleasedAt Example: Russian Turkey Scenario; Release Axioms; Bibliographic Notes; Exercises; 6 Indirect Effects of Events; Effect Axioms; Example: Carrying a Book; Discussion; Primitive and Derived Fluents; Example: Device; Release Axioms and State Constraints; Example: Carrying a Book Revisited; Effect Constraints; Example: Carrying a Book Revisited; Causal Constraints; Example: Thielscher's Circuit; Trigger Axioms; Example: Thielscher's Circuit with Delays; Example: Shanahan's Circuit with Delays; Bibliographic Notes; Exercises; 7 Continuous Change Trajectory Axioms

Sommario/riassunto

To endow computers with common sense is one of the major long-term goals of Artificial Intelligence research. One approach to this problem is to formalize commonsense reasoning using mathematical logic. Commonsense Reasoning is a detailed, high-level reference on logic-based commonsense reasoning. It uses the event calculus, a highly powerful and usable tool for commonsense reasoning, which Erik T. Mueller demonstrates as the most effective tool for the broadest range of applications. He provides an up-to-date work promoting the use of the event calculus for commonsense reasoning, and bringing
