

Ontological Engineering In Artificial Intelligence

BFO arose against the background of research in ontologies in the... 91e498d2a6 They were proposed by Marvin Minsky in his 1974 article "A Framework for Representing Knowledge". Frames are the primary data structure used in artificial intelligence frame languages; they are stored as ontologies of sets. 91e498d2a6 The Artificial Intelligence Applications Institute (AIAI) was founded in 1983 at the University of Edinburgh as a specialist research and technology-transfer unit focusing on the practical uses of artificial intelligence (AI). The institute was established by Professor Jim Howe and colleagues from the Science and Engineering Research Council (SERC) Special Interest Group in AI in the Department of Artificial Intelligence, with a mission to apply AI techniques to solve real-world industrial and governmental problems. 91e498d2a6 Symbolic AI was the dominant paradigm of AI research from the mid-1950s until the mid-1990s. Researchers in the 1960s and the 1970s were convinced that symbolic approaches would eventually succeed in creating a machine with artificial general intelligence and considered this the ultimate goal of their field. An early boom, with early successes such as the Logic Theorist and Samuel's Checkers Playing... 91e498d2a6 AIAI became one of the leading UK research centres devoted to AI programming systems, intelligent planning systems, decision support, and knowledge-based engineering. It collaborated with both academic partners and international organisations. AIAI joined the newly created Centre for Intelligent Systems and their Applications (CISA) within the University's School of Informatics. In December 2019, the combined organisation was renamed... 91e498d2a6 Artificial intelligence (AI) is intelligence exhibited by machines or software. It is also the name of the scientific field which studies how to create computers and computer software that are capable of intelligent behavior. 91e498d2a6

Frame (artificial intelligence) Frames are the primary data structure used in artificial intelligence frame languages; Frames are an artificial intelligence data structure used to divide knowledge into substructures by representing "stereotyped situations". Marvin Minsky in his 1974 article "A Framework for Representing Knowledge" 91e498d2a6

A large-scale representation of abstract concepts such as actions, time, physical objects and beliefs would be an example of ontological engineering. Ontology engineering is one of the areas of applied ontology, and can be seen as an application of philosophical ontology. Core ideas and objectives of ontology engineering are also central in conceptual modeling. 91e498d2a6

Basic Formal Ontology Formal ontology ISO/IEC 21838 Ontology engineering Upper ontology Unified Basic Formal Ontology (BFO) is a top-level ontology developed by Barry Smith and colleagues to promote interoperability among domain ontologies. National Intelligence and the Chief Digital and Artificial Intelligence Office. The BFO methodology accomplishes this through a process of downward population 91e498d2a6

Symbolic artificial intelligence In artificial intelligence (AI), symbolic artificial intelligence (also known as classical artificial intelligence or logic-based artificial intelligence) In artificial intelligence (AI), symbolic artificial intelligence (also known as classical artificial intelligence or logic-based artificial intelligence) 91e498d2a6

Ontology (information science) academic discipline or field, in creating its terminology, thereby lays the groundwork for an ontology. The field which studies ontologies so conceived is sometimes referred to as applied ontology. More simply, an ontology is a way of showing the properties of a subject area and how they are related, by defining a set of terms and relational expressions that represent the entities in that subject area. Each uses ontological assumptions to frame explicit In information science, an ontology encompasses a representation, formal naming, and definitions of the categories, properties, and relations between the concepts, data, or entities that pertain to one, many, or all domains of discourse 91e498d2a6

== AI terminology == 91e498d2a6

Artificial Intelligence Applications Institute The Artificial Intelligence Applications Institute (AIAI) was founded in 1983 at the University The Artificial Intelligence Applications Institute (AIAI) at the School of Informatics at the University of Edinburgh was a non-profit technology transfer organisation that promoted research in the field of artificial intelligence. promoted research in the field of artificial intelligence 91e498d2a6

High-profile applications of AI include advanced web search engines, chatbots, virtual assistants, autonomous vehicles, play and analysis in strategy games (e.g., chess and Go), and content generation (e.g. images, audio, and videos). 91e498d2a6 Frames are also an extensive part of knowledge representation and reasoning schemes. They were originally derived from semantic networks and are therefore part of structure-based knowledge representations. 91e498d2a6 == Specialized projects == 91e498d2a6

History of artificial intelligence history of artificial intelligence (AI) began in antiquity, with myths, stories, and rumors of artificial beings endowed with intelligence by master craftsmen The history of artificial intelligence (AI) began in antiquity, with myths, stories, and rumors of artificial beings endowed with intelligence by master craftsmen 91e498d2a6

Artificial intelligence It is a field of research in engineering, mathematics, and computer science that develops and studies methods and software that enable machines to perceive their environment and use learning and intelligence to take actions that maximise their chances of achieving defined goals. Artificial intelligence (AI) is the capability of computational systems to perform tasks typically associated with human intelligence, such as learning Artificial intelligence (AI) is the capability of computational systems to perform tasks typically associated with human intelligence, such as learning, reasoning, problem-solving, perception, and decision-making 91e498d2a6

It became apparent that researchers had underestimated the complexity of this objective. In 1974, criticism from James Lighthill and pressure from the U.S. Congress led the U.S. and British Governments to stop funding undirected research into artificial... 91e498d2a6 The traditional goals of AI research include learning, reasoning, knowledge representation, planning, natural language processing, and perception, as well as support for robotics. To reach these goals, AI researchers use techniques including state space search and mathematical optimisation, formal logic, artificial neural networks, and methods based on statistics, operations research, and economics. AI also draws upon psychology, linguistics, philosophy, neuroscience... 91e498d2a6 Every academic discipline or field, in creating its

terminology, thereby lays the groundwork for an ontology. Each uses ontological assumptions to frame explicit theories, research and applications. Improved ontologies may improve problem solving within that domain, interoperability of data systems, and discoverability of data. Translating research papers within every field is a problem made easier when experts from different countries maintain a controlled vocabulary of jargon between each of their languages. For instance, the definition and ontology of economics is a primary concern in Marxist economics, but also in other subfields of economics. An example... 91e498d2a6 A guide to building BFO-conformant domain ontologies was published by MIT Press in 2015. 91e498d2a6

List of artificial intelligence projects non-classified notable artificial intelligence projects. Blue Brain Project, an attempt to create a synthetic brain by reverse-engineering the mammalian brain The following is a list of current and past, non-classified notable artificial intelligence projects 91e498d2a6

== History == 91e498d2a6 Glossary of artificial intelligence 91e498d2a6

Outline of artificial intelligence It is The following outline is provided as an overview of and topical guide to artificial intelligence:. as an overview of and topical guide to artificial intelligence: Artificial intelligence (AI) is intelligence exhibited by machines or software 91e498d2a6

is a collection of methods based on high-level symbolic (human-readable) representations of problems, logic, and search. Symbolic AI used tools such as logic programming, production rules, semantic nets and frames. It developed applications such as knowledge-based systems (in particular, expert systems), symbolic mathematics, automated theorem provers, ontologies, the semantic web, and automated planning and scheduling systems. The symbolic AI paradigm led to important ideas in search, symbolic programming languages, agents, multi-agent systems, the semantic web, and the strengths and limitations of formal knowledge and reasoning systems. 91e498d2a6

Ontology engineering In a broader sense, this field also includes a knowledge construction of the domain using formal ontology representations such as OWL/RDF. of ontological engineering. Core In computer science, information science and systems engineering, ontology engineering is a field which studies the methods and methodologies for building ontologies, which encompasses a representation, formal naming and definition of the categories, properties and relations between the concepts, data and entities of a given domain of interest. Ontology engineering is one of the areas of applied ontology, and can be seen as an application of philosophical ontology 91e498d2a6

The field of AI research was founded at a workshop held on the campus of Dartmouth College in 1956. At the workshop, a concept of the first AI program, Logic Theorist, was presented by future Turing Awardee Allen Newell and future Nobel Laureate Herbert A. Simon, with help from J. C. Shaw. The software architecture of this program differed from modern AI systems in that it was a hand-written fixed script. Attendees of the workshop became the leaders of AI research for decades. Many of them predicted that machines as intelligent as humans would exist within a generation. Despite the eventual success of its attendees and the field as a whole, the workshop was considered a failure. "When the workshop failed to deliver, AI was dismissed as a pipe dream and research funding dried up". 91e498d2a6 Ontology engineering aims at making explicit the knowledge contained within software applications, and within enterprises and business procedures for a particular domain. Ontology engineering offers a direction towards solving the inter-operability problems brought about by semantic obstacles, i.e. the obstacles related to the definitions of business... 91e498d2a6 According to Russell and Norvig's Artificial Intelligence: A Modern Approach, structural representations assemble "facts about particular object and event types and [arrange] the types into a large taxonomic hierarchy analogous to a biological taxonomy". 91e498d2a6 BFO is a formal ontology. The structure of BFO is based on a division of entities into two disjoint categories of continuant and occurrent, the former consists of objects and spatial regions, the latter contains processes conceived as extended through (or spanning) time. BFO thereby seeks to consolidate both time and space within a single framework 91e498d2a6 == Frame structure == 91e498d2a6 == History == 91e498d2a6 In 2021, the standard ISO/IEC 21838-2:2021 Information Technology — Top-level Ontologies (TLO) — Part 2: Basic Formal Ontology (BFO) was published by the Joint Technical Committee of the International Standards Organization and the International Electrotechnical Commission. ISO/IEC 21838 is a multi-part standard. Part 1 of the standard specifies the requirements that must be met if an ontology is to be classified as a top-level ontology by the standard. 91e498d2a6

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