

Inside Computer Understanding Five Programs Plus Miniatures Artificial Intelligence Series

Inside Computer Understanding

First published in 1981. This book has been written for those who want to comprehend how a large natural language-understanding program works. Thirty-five professionals in Cognitive Science, mostly psychologists by training, in a summer school were taught to grapple with the details of programming in Artificial Intelligence. As a part of the curriculum designed for this project the authors created what they called micro-programs. These micro-programs were an attempt to give students the flavor of using a large AI program without all the difficulty normally associated with learning a complex system written by another person. Using the authors' parser, ELI, or story understanding program, SAM, they also gave students the micro versions of these programs, which were very simple versions that operated in roughly the same way as their larger versions, but without all the frills. Students were asked to add pieces to the programs and otherwise modify them in order to learn how they worked.

Inside Computer Understanding

First published in 1981. Routledge is an imprint of Taylor & Francis, an informa company.

Expressive Processing

From the complex city-planning game SimCity to the virtual therapist Eliza: how computational processes open possibilities for understanding and creating digital media. What matters in understanding digital media? Is looking at the external appearance and audience experience of software enough—or should we look further? In *Expressive Processing*, Noah Wardrip-Fruin argues that understanding what goes on beneath the surface, the computational processes that make digital media function, is essential. Wardrip-Fruin looks at “expressive processing” by examining specific works of digital media ranging from the simulated therapist Eliza to the complex city-planning game SimCity. Digital media, he contends, offer particularly intelligible examples of things we need to understand about software in general; if we understand, for instance, the capabilities and histories of artificial intelligence techniques in the context of a computer game, we can use that understanding to judge the use of similar techniques in such higher-stakes social contexts as surveillance.

Experience, Memory, and Reasoning

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Human-Machine Interactive Systems

Many hardware devices present either results or alternatives selected by computers to users. A few are video display terminals (VDTs), touch-tone telephones, and computer-generated speech systems. In part this book concerns the impact and implications of such tools. Alternatively this is an attempt to provide material for researchers, students, and managers concerned with computer interfaces. The subject of computer interfaces is at one level a technical subarea sharing common interests with the broad disciplines of computer science, psychology, and bioengineering. However, it is also a topic thrust to the forefront of interest of a wide variety of individuals who confront one of the most striking technological changes that has occurred in human history—the introduction of contact with computing devices as an essential component of many kinds of ordinary transactions. Point of entry sales, travel and entertainment reservations, and library information, are commonly conducted today by interaction with digital calculating devices that did not exist in the recent past. The papers in this book present several concerns arising from the widespread use of computing. One involves the future implications of further advances of this technology. This is a twofold issue: (a) the potential consequences of changing the basic way that information is managed in areas ranging from design, engineering, and management/planning to information access, education, and clerical function; and (b) improvements that could be instituted from further development of the special characteristics of display techniques, technologies, and algorithms.

Revolutionary Changes in Understanding Man and Society

JOHANN GOTSCHL Over the last decades, social philosophers, economists, sociologists, utility and game theorists, biologists, mathematicians, moral philosophers and philosophers have created totally new concepts and methods of understanding the function and role of humans in their modern societies. The years between 1953 and 1990 brought drastic changes in the scientific foundations and dynamic of today's society. A burst of entirely new, revolutionary ideas, similar to those which heralded the beginning of the twentieth century in physics, dominates the picture. This book also discusses the ongoing refutation of old concepts in the social sciences. Some of them are: the traditional concepts of rationality, for example, based on maximization of interests, the linearity of axiomatic methods, methodological individualism, and the concept of a static society. Today the revolutionary change from a static view of our society to an evolutionary one reverberates through all social sciences and will

dominate the twenty-first century. In an uncertain and risky world where cooperation and teamwork is getting more and more important, one cannot any longer call the maximization of one's own expectations of utility or interests \"rational\" .

Philosophy and AI

Philosophy and AI presents invited contributions that focus on the different perspectives and techniques that philosophy and AI bring to the theory of rationality. Philosophers have found that the concepts and technology of artificial intelligence provide useful ways to test theories of knowledge and reason. Conversely, researchers in artificial intelligence, noting that the production of information-processing systems require a prior theory of rationality, have begun writing philosophy. Philosophy and AI presents invited contributions that focus on the different perspectives and techniques that philosophy and AI bring to the theory of rationality. A Bradford Book

Artificial Intelligence

Artificial Intelligence is the study of how to build or program computers to enable them to do what minds can do. This volume discusses the ways in which computational ideas and computer modeling can aid our understanding of human and animal minds. Major theoretical approaches are outlined, as well as some promising recent developments. Fundamental philosophical questions are discussed along with topics such as: the differences between symbolic and connectionist AI, planning and problem solving, knowledge representation, learning, expert systems, vision, natural language, creativity, and human-computer interaction. This volume is suitable for any psychologist, philosopher, or computer scientist wanting to know the current state of the art in this area of cognitive science. Up-to-date account of how computational ideas and techniques are relevant to psychology Includes discussions of \"classical\" (symbolic) AI, of connectionism (neural nets), of evolutionary programming, and of A-Life Discusses a wide range of psychology from low-level vision to creativity

Narrative Intelligence

Narrative Intelligence (NI) — the confluence of narrative, Artificial Intelligence, and media studies — studies, models, and supports the human use of narrative to understand the world. This volume brings together established work and founding documents in Narrative Intelligence to form a common reference point for NI researchers, providing perspectives from computational linguistics, agent research, psychology, ethology, art, and media theory. It describes artificial agents with narratively structured behavior, agents that take part in stories and tours, systems that automatically generate stories, dramas, and documentaries, and systems that support people telling their own stories. It looks at how people use stories, the features of narrative that play a role in how people understand the world, and how human narrative ability may have evolved. It addresses meta-issues in NI: the history of the field, the stories AI researchers tell about their research, and the effects those stories have on the things they discover. (Series B)

Language and Meaning in Cognitive Science

Summarizes and illuminates two decades of research Gathering important papers by both philosophers and scientists, this collection illuminates the central themes that have arisen during the last two decades of work on the conceptual foundations of artificial intelligence and cognitive science. Each volume begins with a comprehensive introduction that places the coverage in a broader perspective and links it with material in the companion volumes. The collection is of interest in many disciplines including computer science, linguistics, biology, information science, psychology, neuroscience, iconography, and philosophy. Examines initial efforts and the latest controversies The topics covered range from the bedrock assumptions of the computational approach to understanding the mind, to the more recent debates concerning cognitive architectures, all the way to the latest developments in robotics, artificial life, and dynamical systems theory. The collection first examines the lineage of major research programs, beginning with the basic idea of machine intelligence itself, then focuses on specific aspects of thought and intelligence, highlighting the much-discussed issue of consciousness, the equally important, but less densely researched issue of emotional response, and the more traditionally philosophical topic of language and meaning. Provides a gamut of perspectives The editors have included several articles that challenge crucial elements of the familiar research program of cognitive science, as well as important writings whose previous circulation has been limited. Within each volume the papers are organized to reflect a variety of research programs and issues. The substantive introductions that accompany each volume further organize the material and provide readers with a working sense of the issues and the connection between articles.

Machine Learning: How Artificial Intelligence Learns (Fun Picture Book for K-2, AI+ME Series, Big Idea 3)

Is your child interested in sci-fi, robots, or video games? Is your kid fascinated by smart home assistants and the prospect of self-driving cars? Time to turn that enthusiasm into action and engage with the exciting world of artificial intelligence! AI+Me is a series designed to introduce the 5 Big Ideas of Artificial Intelligence to young learners. Students take a deep dive into the Five Big Ideas of AI (Perception, Representation and Reasoning, Learning, Natural Interaction, and Societal Impact). This is the 3rd book in the AI+Me series focused on Learning. The series is recommended for K-2 students. Why should children be educated about AI? Learning AI opens up a world of opportunities. As the fastest growing area of computer science, AI will become the most important change force when our children grow up so it is critical they learn about it early. AI is fun! The field of AI started with scientists making computers learn to play games. AI is an incredibly fun way to introduce kids to programming and pique their interest in advanced topics like deep learning. Lastly, a topic like AI naturally opens up discussions about our humanity. In our curriculum, we

dig deep into questions like “does AI positively or negatively impact society?” In doing so we aim to develop critical thinking skills and encourage students to reflect deeply. Benefits of AI education: - Gets children interested in #STEM education - Improves their problem-solving and critical-thinking skills - Builds their understanding of the tech tools that’ll shape their future - Starts important conversations about the future of humanity What are educators saying: “I really love these books. I think they are absolutely beautiful and very visually engaging ways for students to learn about artificial intelligence. I like how they progress through the topic and terms related to artificial intelligence and help students to attach meaning to what they are learning by the different examples and step-by-step ways that students build their understanding through the book.” - Rachele Dene Poth, Author of In Other Words, Unconventional, The Future is Now, and Chart a New Course. What are parents saying: “My 1st grader loves this book. She already is really interested in computers, but this book got her thinking about how we actually tell emotions. She started using her camera on her computer to record different expressions.” “My son learned ReadyAI courses before. I let his friend read AI+Me big idea 1. Surprisingly, both of them finished reading the book, with a lot of interest! I Will recommend this book for elementary school students.” “I have been looking for fun ways to introduce AI to my kid, and this definitely nailed it.”

New Directions for Intelligent Tutoring Systems

This book is a result of the NATO Advanced Research Workshop on New Directions for Intelligent Tutoring Systems, held in Sintra, Portugal, October 6-10, 1990. The main idea behind the workshop was to bring together scientists with different concerns about Intelligent Tutoring Systems (ITS) in order to discuss the positive and negative aspects of the current architecture paradigm (expert module, student module, instructional module, and interface module) and, eventually, propose some modifications or radical changes to it. This was a consequence of the increasing malaise felt currently by researchers in the area of artificial intelligence and education and in particular by those concerned with ITS. One symptom of this state of affairs is the fact that people have started talking about Intelligent Learning Environments (ILE) instead of ITS. To understand the reasons for this situation we promoted the discussion of questions like: - To what extent do we need the technology of expert systems in ITS? Which other relevant AI techniques and methodologies are urgently needed? - Is ITS a tool for knowledge communication or is it rather a belief system? - How can the research already done on interactions among agents be utilized? - Is it possible to find a formal theory to describe and solve the current problems with ITS? The book contains the revised versions of the papers presented at the workshop. The new texts reflect the discussions that took place at the meeting.

Artificial Intelligence

This series will include monographs and collections of studies devoted to the investigation and exploration of knowledge, information, and data processing systems of all kinds, no matter whether human, (other) animal, or machine. Its scope is intended to span the full range of interests from classical problems in the philosophy of mind and philosophical psychology through issues in cognitive psychology and sociobiology (concerning the mental capabilities of other species) to ideas related to artificial intelligence and to computer science. While primary emphasis will be placed upon theoretical, conceptual, and epistemological aspects of these problems and domains, empirical, experimental, and methodological studies will also appear from time to time. The perspective that prevails in artificial intelligence today suggests that the theory of computability defines the boundaries of the nature of thought, precisely because all thinking is computational. This paradigm draws its inspiration from the symbol-system hypothesis of Newell and Simon and finds its culmination in the computational conception of language and mentality. The “standard conception” represented by these views is subjected to a thorough and sustained critique in the pages of this book. Employing a distinction between systems for which signs are significant for the users of a system and others for which signs are significant for use by a system, I have sought to define the boundaries of what AI, in principle, may be expected to achieve.

Artificial Intelligence: Its Scope and Limits

Castel Ivano, originally built in 1375, is one of many beautiful and impressive castles strategically placed atop hills in Trentino's Valsugana in Northern Italy. It was in this castle on a series of brilliant sunny crisp November days in 1990 that an international group of computer scientists and cognitive scientists met at a workshop to discuss theoretical and applied issues concerning communication from an Artificial Intelligence and Cognitive Science perspective. About forty people, representing nine countries, participated in the workshop, either as speakers, discussants, or observers. The main motivation for the workshop was to address the question of whether and how current computational approaches to communication can or might be able to accommodate the range of complexities that characterize both human-human and human-machine communication. The chapters in this book are based on the papers that were presented at the workshop. They are presented in an order that is determined primarily by the specificity of the topics they address. The initial chapters are more theoretical in nature with an emphasis on formal approaches to communication. The middle chapters focus on particular application issues, such as the generation of multimedia documents and the role of planning in building systems to support human-human or human-machine interaction. The final few chapters consider more general issues relating to communication, such as the influence of social structure on, and the role of affect in communication.

Communication from an Artificial Intelligence Perspective

This series will include monographs and collections of studies devoted to the investigation and exploration of knowledge, information, and data-processing systems of all kinds, no matter whether human, (other) animal, or machine. Its scope is intended to span the full range of interests from classical problems in the philosophy of mind and philosophical psychology through issues in cognitive psychology and sociobiology (concerning the mental capabilities of other species) to ideas related to artificial intelligence and computer science. While primary emphasis will be placed upon theoretical, conceptual, and epistemological aspects of these

problems and domains, empirical, experimental, and methodological studies will also appear from time to time. No problem within the field of cognitive inquiry is more difficult than that of developing an adequate conception of the nature of mind and of its mode of operation. Our purpose in compiling the present volume has been to contribute to the pursuit of this objective by bringing together a representative cross-section of the principal approaches and the primary players who are engaged in contemporary debate on these crucial issues. The book begins with a comprehensive introduction composed by David Cole, the senior editor of this work, which provides a background for understanding the major problems and alternative solutions, and ends with a selected bibliography intended to promote further research. If our efforts assist others in dealing with these issues, they will have been worthwhile. J. H. F. David J. Cole et al. (eds.), *Philosophy, Mind, and Cognitive Inquiry*, ix.

Philosophy, Mind, and Cognitive Inquiry

This Festschrift volume is published in Honor of Yaacov Choueka on the occasion of this 75th birthday. The present three-volumes *liber amicorum*, several years in gestation, honours this outstanding Israeli computer scientist and is dedicated to him and to his scientific endeavours. Yaacov's research has had a major impact not only within the walls of academia, but also in the daily life of lay users of such technology that originated from his research. An especially amazing aspect of the temporal span of his scholarly work is that half a century after his influential research from the early 1960s, a project in which he is currently involved is proving to be a sensation, as will become apparent from what follows. Yaacov Choueka began his research career in the theory of computer science, dealing with basic questions regarding the relation between mathematical logic and automata theory. From formal languages, Yaacov moved to natural languages. He was a founder of natural-language processing in Israel, developing numerous tools for Hebrew. He is best known for his primary role, together with Aviezri Fraenkel, in the development of the Responsa Project, one of the earliest fulltext retrieval systems in the world. More recently, he has headed the Friedberg Genizah Project, which is bringing the treasures of the Cairo Genizah into the Digital Age. This second part of the three-volume set covers a range of topics related to the application of information technology in humanities, law, and narratives. The papers are grouped in topical sections on: humanities computing; narratives and their formal representation; history of ideas: the numerate disciplines; law, computer law, and legal computing.

Language, Culture, Computation: Computing for the Humanities, Law, and Narratives

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 into one place information scattered across many books and papers. Mueller shares the knowledge gained in using the event calculus and extends the literature with detailed event calculus solutions to problems that span many areas of the commonsense world. Covers key areas of commonsense reasoning including action, change, defaults, space, and mental states. The first full book on commonsense reasoning to use the event calculus. Contextualizes the event calculus within the framework of commonsense reasoning, introducing the event calculus as the best method overall. Focuses on how to use the event calculus formalism to perform commonsense reasoning, while existing papers and books examine the formalisms themselves. Includes fully worked out proofs and circumscriptions for every example.

Commonsense Reasoning

The main approach to understanding and creating knowledge engineering concepts is static knowledge. Currently, there is a need to approach knowledge through a dynamic lens and address changing relations on an elaborated syntactic and semantic basis. *Dynamic Knowledge Representation in Scientific Domains* provides emerging research on the internal and external changes in knowledge within various subject areas and their visual representations. While highlighting topics such as behavior diagrams, distribution analysis, and qualitative modeling, this publication explores the structural development and assessment of knowledge models. This book is an important resource for academicians, researchers, students, and practitioners seeking current research on information visualization in order to foster research and collaboration.

Dynamic Knowledge Representation in Scientific Domains

Psychology of Learning and Motivation

Psychology of Learning and Motivation

Most machine learning research has been concerned with the development of systems that implement one type of inference within a single representational paradigm. Such systems, which can be called *monostrategy learning systems*, include those for empirical induction of decision trees or rules, explanation-based generalization, neural net learning from examples, genetic algorithm-based learning, and others. *Monostrategy learning systems* can be very effective and useful if learning problems to which they are applied are sufficiently narrowly defined. Many real-world applications, however, pose learning problems that go beyond the capability of *monostrategy learning methods*. In view of this, recent years have witnessed a growing interest in developing *multistrategy systems*, which integrate two or more inference types and/or paradigms within one learning system. Such *multistrategy systems* take advantage of the complementarity of different inference types or representational mechanisms.

Therefore, they have a potential to be more versatile and more powerful than monostrategy systems. On the other hand, due to their greater complexity, their development is significantly more difficult and represents a new great challenge to the machine learning community. Multistrategy Learning contains contributions characteristic of the current research in this area.

Multistrategy Learning

Mathematics has been used as a tool in logistical reasoning for centuries. Examining how specific mathematic structures can aid in data and knowledge management helps determine how to efficiently and effectively process more information in these fields. N-ary Relations for Logical Analysis of Data and Knowledge is a critical scholarly reference source that provides a detailed study of the mathematical techniques currently involved in the progression of information technology fields. Featuring relevant topics that include algebraic sets, deductive analysis, defeasible reasoning, and probabilistic modeling, this publication is ideal for academicians, students, and researchers who are interested in staying apprised of the latest research in the information technology field.

N-ary Relations for Logical Analysis of Data and Knowledge

This book provides an overview of computer techniques and tools — especially from artificial intelligence (AI) — for handling legal evidence, police intelligence, crime analysis or detection, and forensic testing, with a sustained discussion of methods for the modelling of reasoning and forming an opinion about the evidence, methods for the modelling of argumentation, and computational approaches to dealing with legal, or any, narratives. By the 2000s, the modelling of reasoning on legal evidence has emerged as a significant area within the well-established field of AI & Law. An overview such as this one has never been attempted before. It offers a panoramic view of topics, techniques and tools. It is more than a survey, as topic after topic, the reader can get a closer view of approaches and techniques. One aim is to introduce practitioners of AI to the modelling legal evidence. Another aim is to introduce legal professionals, as well as the more technically oriented among law enforcement professionals, or researchers in police science, to information technology resources from which their own respective field stands to benefit. Computer scientists must not blunder into design choices resulting in tools objectionable for legal professionals, so it is important to be aware of ongoing controversies. A survey is provided of argumentation tools or methods for reasoning about the evidence. Another class of tools considered here is intended to assist in organisational aspects of managing of the evidence. Moreover, tools appropriate for crime detection, intelligence, and investigation include tools based on link analysis and data mining. Concepts and techniques are introduced, along with case studies. So are areas in the forensic sciences. Special chapters are devoted to VIRTopsy (a procedure for legal medicine) and FLINTS (a tool for the police). This is both an introductory book (possibly a textbook), and a reference for specialists from various quarters.

Computer Applications for Handling Legal Evidence, Police Investigation and Case Argumentation

Proceedings of the NATO Advanced Research Workshop, Nijmegen, The Netherlands, August 19-23, 1986

Natural Language Generation

This book constitutes the refereed proceedings of the 5th International Conference on Interactive Digital Storytelling, ICIDS 2012, San Sebastián, Spain, November 2012. The 14 revised full papers presented together with 6 short papers were carefully reviewed and selected from 48 submissions. The papers are organized in topical sections on theory and aesthetics; authoring tools and applications; evaluation and user experience reports; virtual characters and agents; new storytelling modes; workshops.

Artificial Intelligence

"The Encyclopedia of Microcomputers serves as the ideal companion reference to the popular Encyclopedia of Computer Science and Technology. Now in its 10th year of publication, this timely reference work details the broad spectrum of microcomputer technology, including microcomputer history; explains and illustrates the use of microcomputers throughout academe, business, government, and society in general; and assesses the future impact of this rapidly changing technology."

Interactive Storytelling

This text provides an excellent introduction and overview of Narratology, a rapidly growing field in the humanities. Literary narratologists have provided many key concepts and analytical tools which are widely used in the interdisciplinary analysis of such narrative features as plot, point of view, speech presentation, ideological perspective and interpretation. The introduction explains the central concepts of narratology, their historical development, and draws together contemporary trends from many different disciplines into common focus. It offers a compendium of the development of narratology from classical poetics to the present. The essays are all prefaced by individual forewords helping the reader to place each individual selection in context. Recent developments are assessed across disciplines, highlighting the mutual influences of narratology and deconstruction, psychoanalysis, feminism, film and media studies.

Encyclopedia of Microcomputers

The rich programme of ICIDS 2009, comprising invited talks, technical presentations and posters, demonstrations, and co-located post-conference workshops clearly underscores the event's status as premier international meeting in the domain. It thereby confirms the decision taken by the Constituting Committee of the conference series to take the step forward: out of the national cocoons of its precursors, ICVS and TIDSE, and towards an itinerant platform reflecting its global constituency. This move reflects the desire and the will to take on the challenge to stay on the lookout, critically reflect upon and integrate views and ideas, findings and experiences, and to promote interdisciplinary exchange, while ensuring overall coherence and maintaining a sense of direction. This is a significant enterprise: The challenges sought are multifarious and must be addressed consistently at all levels. The desire to involve all research communities and stakeholders must be matched by acknowledging the differences in established practises and by providing suitable means of guidance and introduction, exposition and direct interaction at the event itself and of lasting (and increasingly: living) documentation, of which the present proceedings are but an important part.

Narratology

Is it possible to construct an artificial person? Researchers in the field of artificial intelligence have for decades been developing computer programs that emulate human intelligence. This book goes beyond intelligence and describes how close we are to recreating many of the other capacities that make us human. These abilities include learning, creativity, consciousness, and emotion. The attempt to understand and engineer these abilities constitutes the new interdisciplinary field of artificial psychology, which is characterized by contributions from philosophy, cognitive psychology, neuroscience, computer science, and robotics. This work is intended for use as a main or supplementary introductory textbook for a course in cognitive psychology, cognitive science, artificial intelligence, or the philosophy of mind. It examines human abilities as operating requirements that an artificial person must have and analyzes them from a multidisciplinary approach. The book is comprehensive in scope, covering traditional topics like perception, memory, and problem solving. However, it also describes recent advances in the study of free will, ethical behavior, affective architectures, social robots, and hybrid human-machine societies.

Interactive Storytelling

This series will include monographs and collections of studies devoted to the investigation and exploration of knowledge, information and data processing systems of all kinds, no matter whether human, (other) animal, or machine. Its scope is intended to span the full range of interests from classical problems in the philosophy of mind and philosophical psychology through issues in cognitive psychology and sociobiology (concerning the mental capabilities of other species) to ideas related to artificial intelligence and to computer science. While primary emphasis will be placed upon theoretical, conceptual and epistemological aspects of these problems and domains, empirical, experimental and methodological studies will also appear from time to time. One of the most, if not the most, exciting developments within cognitive science has been the emergence of connectionism as an alternative to the computational conception of the mind that tends to dominate the discipline. In this volume, John Tienson and Terence Horgan have brought together a fine collection of stimulating studies on connectionism and its significance. As the Introduction explains, the most pressing questions concern whether or not connectionism can provide a new conception of the nature of mentality. By focusing on the similarities and differences between connectionism and other approaches to cognitive science, the chapters of this book supply valuable resources that advance our understanding of these difficult issues. J.H.F.

Artificial Psychology

Genius is a fascinating topic. Everyone has an opinion on it, but not a lot of clarity. Much has been written on the subject - biographies, autobiographies, technical books, popular science books, and practical manuals - but genius in all of its dimensions has yet to be addressed. This book seeks to remedy that. What follows is a work of significant breadth that hopes to facilitate a nuanced popular understanding of the definition of genius, examining all of the main theories and approaches regarding the nature and origin of brilliance, the cognitive path that geniuses follow, and the difference that exists between "geniuses" on one side and "normal people" on the other. Pragmatic indications surrounding this issue are also examined, regarding such questions as: is it possible to become a genius or is genius innate? If it is possible, what is the path - no doubt long and difficult - that one must take? Is there a method for becoming a genius that can be taught and learned? This book will appeal to anyone who has ever contemplated great ideas and works and wondered how they came into being.

Connectionism and the Philosophy of Mind

Is human creativity a wall that AI can never scale? Many people are happy to admit that experts in many domains can be matched by either knowledge-based or sub-symbolic systems, but even some AI researchers harbor the hope that when it comes to feats of sheer brilliance, mind over machine is an unalterable fact. In this book, the authors push AI toward a time when machines can autonomously write not just humdrum stories of the sort seen for years in AI, but first-rate fiction thought to be the province of human genius. It reports on five years of effort devoted to building a story generator--the BRUTUS.1 system. This book was written for three general reasons. The first theoretical reason for investing time, money, and talent in the quest for a truly creative machine is to work toward an answer to the question of whether we ourselves are machines. The second theoretical reason is to silence those who believe that logic is forever closed off from the emotional world of creativity. The practical rationale for this endeavor, and the third reason, is that machines able to work alongside humans in arenas calling for creativity will have incalculable worth.

Genius

This book highlights cutting-edge research relevant to the building of a computational model of reading comprehension, as in the processing and understanding of a natural language text or story. The book takes an interdisciplinary approach to the study of reading, with contributions from computer science, psychology, and philosophy. Contributors cover the theoretical and psychological foundations of the research in discussions of what it means to understand a text, how one builds a computational model, and related issues in knowledge representation and reasoning. The book also addresses some of the broader issues that a natural language system must deal with, such as reading in context, linguistic novelty, and information extraction.

Artificial Intelligence and Literary Creativity

Computational Creativity, Concept Invention, and General Intelligence in their own right all are flourishing research disciplines producing surprising and captivating results that continuously influence and change our view on where the limits of intelligent machines lie, each day pushing the boundaries a bit further. By 2014, all three fields also have left their marks on everyday life – machine-composed music has been performed in concert halls, automated theorem provers are accepted tools in enterprises' R&D departments, and cognitive architectures are being integrated in pilot assistance systems for next generation airplanes. Still, although the corresponding aims and goals are clearly similar (as are the common methods and approaches), the developments in each of these areas have happened mostly individually within the respective community and without closer relationships to the goings-on in the other two disciplines. In order to overcome this gap and to provide a common platform for interaction and exchange between the different directions, the International Workshops on "Computational Creativity, Concept Invention, and General Intelligence" (C3GI) have been started. At ECAI-2012 and IJCAI-2013, the first and second edition of C3GI each gathered researchers from all three fields, presenting recent developments and results from their research and in dialogue and joint debates bridging the disciplinary boundaries. The chapters contained in this book are based on expanded versions of accepted contributions to the workshops and additional selected contributions by renowned researchers in the relevant fields. Individually, they give an account of the state-of-the-art in their respective area, discussing both, theoretical approaches as well as implemented systems. When taken together and looked at from an integrative perspective, the book in its totality offers a starting point for a (re)integration of Computational Creativity, Concept Invention, and General Intelligence, making visible common lines of work and theoretical underpinnings, and pointing at chances and opportunities arising from the interplay of the three fields.

Understanding Language Understanding

Modeling of individual beliefs is essential to the computer understanding of natural languages. Phenomena at all levels -- syntactic, semantic, and pragmatic -- cannot be fully analyzed in the absence of models of a hearer and of the hearer's model of other believers. The heart of this text is the presentation of an artificial intelligence (AI) program intended to simulate certain aspects of a human believer. This book provides a prolog program, Viewgen, that maintains belief structures about the world and other believers, and is able to ascribe beliefs to others without direct evidence by using a form of default reasoning. The authors contend that a plausible model such as this can -- in the best cognitive science tradition -- shed light on the long-standing philosophical problem of what belief is. The issues presented here will be of considerable interest to an informed general reader as well as those with a background in any of the disciplines that make up what is now called cognitive science: philosophy, linguistics, psychology, neuropsychology, and also AI itself.

Computational Creativity Research: Towards Creative Machines

Creativity is one of the least understood aspects of intelligence and is often seen as 'intuitive' and not susceptible to rational enquiry. Recently, however, there has been a resurgence of interest in the area, principally in artificial intelligence and cognitive science, but also in psychology, philosophy, computer science, logic, mathematics, sociology, and architecture and design. This volume brings this work together and provides an overview of this rapidly developing field. It addresses a range of issues. Can computers be creative? Can they help us to understand human creativity? How can artificial intelligence (AI) enhance human creativity? How, in particular, can it contribute to the 'sciences of the artificial', such as design? Does the new wave of AI (connectionism, geneticism and artificial life) offer more promise in these areas than classical, symbol-handling AI? What would the implications be for AI and cognitive science if computers could not be creative? These issues are explored in five interrelated parts, each of which is introduced and explained by a leading figure in the field. - Prologue (Margaret Boden) - Part I: Foundational Issues (Terry Dartnall) - Part II: Creativity and Cognition (Graeme S. Halford and Robert Levinson) - Part III: Creativity and Connectionism (Chris Thornton) - Part IV: Creativity and Design (John Gero) - Part V: Human Creativity Enhancement (Ernest Edmonds) - Epilogue (Douglas Hofstadter) For researchers in AI, cognitive science, computer science, philosophy, psychology, mathematics, logic, sociology, and architecture and design; and anyone interested in the rapidly growing field of artificial intelligence and creativity.

Understanding Artificial Intelligence

First published in 1982. Routledge is an imprint of Taylor & Francis, an informa company.

Artificial Believers

The book examines how our understanding of human creativity can be extended by exploring this phenomenon during human evolution and prehistory.

Artificial Intelligence and Creativity

Strategies for Natural Language Processing

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https://uk.fulldoc.me/ref/nm/25934NM/born_of-flame_the-horus_heresy.pdf
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