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SPECIALTY SECTION
This article was submitted to
Human-Media Interaction,
a section of the journal
Frontiers in Psychology

RECEIVED 04 August 2022
ACCEPTED 23 November 2022
PUBLISHED 04 January 2023

CITATION
van der Maden W, Lomas D and
Hekkert P (2023) A framework for designing
AI systems that support community
wellbeing.
Front. Psychol. 13:1011883.
doi: 10.3389/fpsyg.2022.1011883

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A framework for designing AI systems that support community wellbeing

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Introduction: Designing artificial intelligence (AI) to support health and wellbeing is an important and broad challenge for technologists, designers, and policymakers. Drawing upon theories of AI and cybernetics, this article offers a design framework for designing intelligent systems to optimize human wellbeing. We focus on the production of wellbeing information feedback loops in complex community settings, and discuss the case study of My Wellness Check, an intelligent system designed to support the mental health and wellbeing needs of university students and staff during the COVID-19 pandemic.

Methods: The basis for our discussion is the community-led design of My Wellness Check, an intelligent system that supported the mental health and wellbeing needs of university students and staff during the COVID-19 pandemic. Our system was designed to create an intelligent feedback loop to assess community wellbeing needs and to inform community action. This article provides an overview of our longitudinal assessment of students and staff wellbeing ($n = 20,311$) across two years of the COVID-19 pandemic.

Results: We further share the results of a controlled experiment ($n = 1,719$) demonstrating the enhanced sensitivity and user experience of our context-sensitive wellbeing assessment.

Discussion: Our approach to designing “AI for community wellbeing,” may generalize to the systematic improvement of human wellbeing in other human-computer systems for large-scale governance (e.g., schools, businesses, NGOs, platforms). The two main contributions are: 1) showcasing a simple way to draw from AI theory to produce more intelligent human systems, and 2) introducing a human-centered, community-led approach that may be beneficial to the field of AI.

KEYWORDS

human-centered design, community wellbeing, artificial intelligence, cybernetics, wellbeing economy, feedback loop, human values

Introduction

As the use of Artificial Intelligence (AI) continues to advance, researchers are increasingly exploring its potential to support and enhance mental health and wellbeing. With its ability to analyze large amounts of data and make complex decisions, AI has the potential to provide valuable insights and support to individuals and communities seeking to improve their mental

Designing Intelligence A Framework For Smart Systems

Tareq Ahram and Redha Tair



Designing Intelligence A Framework For Smart Systems:

Designing Intelligence Steven H. Kim,1990 The study of intelligent systems has assumed increasing importance as computers have become integrated into scientific and technological processes Such systems are used by biologists in modeling adaptive structures by cognitive psychologists looking at reasoning mechanisms by engineers working with microprocessor based devices of all kinds by industrial planners of automated factories and in many kinds of information and office management networks However there is no accepted general theory nor even a coherent framework for discussing such developments The aim of this text is to present a general basis for analyzing and synthesizing natural and artificial intelligent systems fusing theoretical models with a set of relationships or behavioral principles Written at the graduate level the book will be highly useful in courses for mechanical engineers and computer scientists It will also have wide appeal for researchers and scientists involved in using and designing computer based intelligent systems *Managing Expert Systems* Efraim Turban,Jay Liebowitz,1992-01-01 *Managing Expert Systems* explores the trends in expert systems development and implementation As top authorities in the field of ES Turban and Liebowitz examine the factors that contribute to the development of a successful expert system *Learning and Coordination* S.H. Kim,2012-12-06 Intelligent systems of the natural kind are adaptive and robust they learn over time and degrade gracefully under stress If artificial systems are to display a similar level of sophistication an organizing framework and operating principles are required to manage the resulting complexity of design and behavior This book presents a general framework for adaptive systems The utility of the comprehensive framework is demonstrated by tailoring it to particular models of computational learning ranging from neural networks to declarative logic The key to robustness lies in distributed decision making An exemplar of this strategy is the neural network in both its biological and synthetic forms In a neural network the knowledge is encoded in the collection of cells and their linkages rather than in any single component Distributed decision making is even more apparent in the case of independent agents For a population of autonomous agents their proper coordination may well be more instrumental for attaining their objectives than are their individual capabilities This book probes the problems and opportunities arising from autonomous agents acting individually and collectively Following the general framework for learning systems and its application to neural networks the coordination of independent agents through game theory is explored Finally the utility of game theory for artificial agents is revealed through a case study in robotic coordination Given the universality of the subjects learning behavior and coordinative strategies in uncertain environments this book will be of interest to students and researchers in various disciplines ranging from all areas of engineering to the computing disciplines from the life sciences to the physical sciences and from the management arts to social studies **Machine Intelligence and Smart Systems** Shikha Agrawal,Kamlesh Kumar Gupta,Jonathan H. Chan,Jitendra Agrawal,Manish Gupta,2021-04-08 This book is a collection of peer reviewed best selected research papers presented at the First International Conference on Machine Intelligence and

Smart Systems 2020 MISS 2020 organized during September 24 25 2020 in Gwalior India The book presents new advances and research results in the fields of machine intelligence artificial intelligence and smart systems It includes main paradigms of machine intelligence algorithms namely 1 neural networks 2 evolutionary computation 3 swarm intelligence 4 fuzzy systems and 5 immunological computation Human Interaction & Emerging Technologies (IHiet 2022): Artificial Intelligence & Future Applications Tareq Ahram and Redha Taiar,2022-07-24 Human Interaction Emerging Technologies IHiet 2022 Artificial Intelligence Future Applications Proceedings of the 8th International Conference on Human Interaction Emerging Technologies IHiet 2022 Artificial Intelligence Future Applications August 22 24 2022 Nice France **Advances in Ergonomics in Design** Francisco Rebelo,2021-06-28 This book provides readers with a timely snapshot of ergonomics research and methods applied to the design development and evaluation of products systems and services It gathers theoretical contributions case studies and reports on technical interventions focusing on a better understanding of human machine interaction and user experience for improving product design The book covers a wide range of established and emerging topics in user centered design relating to design for special populations design education workplace assessment and design anthropometry ergonomics of buildings and urban design sustainable design as well as visual ergonomics and interdisciplinary research and practices among others Based on the AHFE 2021 International Conference on Ergonomics in Design held virtually on 25 29 July 2021 from USA the book offers a thought provoking guide for both researchers and practitioners in human centered design and related fields *Proceedings, IEEE Conference on Managing Expert System Programs and Projects, Holiday Inn, Bethesda, Maryland, September 10-12, 1990* Jay Liebowitz, Jerald Feinstein, Randall Shumaker, 1990 Proceedings of the conference held in Bethesda Maryland September 1990 on one of the major pitfalls in applying expert systems in organizations namely the management of programs and projects The papers and panels address topics in project management case studies economic and legal considerations approaches to specific company needs standardization getting started in expert systems future of expert systems applications and innovative technologies No subject index Acidic paper Annotation copyrighted by Book News Inc Portland OR **Journal of Dynamic Systems, Measurement, and Control**, 1992 Publishes theoretical and applied original papers in dynamic systems Theoretical papers present new theoretical developments and knowledge for controls of dynamical systems together with clear engineering motivation for the new theory Applied papers include modeling simulation and corroboration of theory with emphasis on demonstrated practicality *Enterprise Design, Operations, and Computing. EDOC 2023 Workshops* Tiago Prince Sales, Sybren de Kinderen, Henderik A. Proper, Luise Pufahl, Dimka Karastoyanova, Marten van Sinderen, 2024-03-01 This volume constitutes revised selected papers of several workshops the EDOC Forum and the Demonstrations and Doctoral Consortium track which were held in conjunction with the 27th International Conference on Enterprise Design Operations and Computing EDOC 2023 in Groningen The Netherlands during October 30 November 3 2023 The 18 revised full papers

and 7 short papers presented in this book were carefully reviewed and selected from 37 submissions They stem from the following satellite events Workshop on Intelligent Digital Architecture Methods and Services for Industry 4 0 and Society 5 0 IDAMS Workshop on Empirical Methodologies for Research in Enterprise Architecture and Service Oriented Computing iRESEARCH Workshop on the Modelling and Implementation of Digital Twins for Complex Systems MIDas4CS Workshop on Service oriented Enterprise Architecture for Enterprise Engineering SoEA4EE EDOC Forum Demonstrations Track Doctoral Consortium

Enterprise Architecture for Global Companies in a Digital IT Era Yoshimasa Masuda, Murlikrishna Viswanathan, 2025-08-22 This book investigates solutions incorporated by architecture boards in global enterprises to resolve issues and mitigate related architecture risks while also proposing and implementing an adaptive integrated digital architecture framework AIDAF and related models and approaches platforms covering Big Data and AI such as Generative AI unstructured data analytics and HCI AI etc which can be applied in companies to promote IT strategies using cloud mobile IT digital IT The book is divided into three main parts the first of which Chapters 1 2 addresses the background and motivation for AIDAF aligned with digital IT strategies while involving AI and Design Thinking approach The second part Chapter 3 provides an overview of strategic enterprise architecture EA frameworks for digital IT elaborates on the essential elements of EA frameworks in the digital IT era and advocates using AIDAF models for architecture assessment risk management and knowledge management on digital platforms while involving the new models introduction with Design Thinking approach covering AI and Digital Transformation process In turn the third part Chapters 4 9 demonstrates the application and benefits of AIDAF and related models involving the above new ones for AI and Digital Transformation process as shown in more than six case studies I found this book to be a very nice contribution to the EA community of practice I can recommend this book as a textbook for digital IT strategists practitioners EA practitioners students in universities and graduate schools From the Foreword by Scott A Bernard In this new age of the digital information society it is necessary to advocate a new EA framework This book provides state of the art knowledge and practices about EA frameworks beneficial for IT practitioners IT strategists CIO IT architects and even students It serves as an introductory textbook for all who drive the information society in this era From the Foreword by Jun Murai

Journal of Applied Mechanics , Design Theory and Methodology, DTM '94 T. K. Hight, Farrokh Mistree, 1994 Contains papers from the September 1994 conference exploring subjects such as quality and tolerance house of quality robust and axiomatic design paradoxes in design abstractions in mechanical design complexity and collaborative design paradigms for design education and recent design methods **AI Magazine** , 1992

Intelligent Systems Alexander M. Meystel, James S. Albus, 2002 This comprehensive treatment of the field of intelligent systems is written by two of the foremost authorities in the field The authors clearly examine the theoretical and practical aspects of these systems The book focuses on the NIST RCS Real time Control System model that has been used recently in the Mars Rover

Concise International Encyclopedia of Robotics Richard C. Dorf, Shimon Y. Nof, 1990-04-30 This

volume a condensation of the highly regarded International Encyclopedia of Robotics serves as an invaluable guide to the rapidly growing field of robotics None of the articles from the earlier three volume work has been omitted Instead the articles have been shortened and where necessary updated to provide a ready reference tool for professionals seeking to understand and gain from the use of robots and automation Written by a wide variety of experts the articles are cross referenced and include extensive bibliographic information The articles provide thorough coverage of all of the associated theoretical aspects of robotics as well as most of the present and future applications Stressing readability accuracy and ease of use it gathers in one volume the result of years of knowledge and experience Subject Guide to Books in Print ,1997

Artificial Intelligence Trends in Intelligent Systems Radek Silhavy,Roman Senkerik,Zuzana Kominkova Oplatkova,Zdenka Prokopova,Petr Silhavy,2017-04-06 This book presents new methods and approaches to real world problems as well as exploratory research that describes novel artificial intelligence applications including deep learning neural networks and hybrid algorithms This book constitutes the refereed proceedings of the Artificial Intelligence Trends in Intelligent Systems Section of the 6th Computer Science On line Conference 2017 CSOC 2017 held in April 2017 **Smart Engineering System Design** Cihan H. Dagli,2002 Proceedings of the Artificial Neural Networks in Engineering Conference November 2002 St Louis Missouri This annual conference publication presents refereed papers covering the following categories and their applications in the engineering domain Neural Networks Complex Systems Evolutionary Programming Data Mining Fuzzy Logic Adaptive Control Pattern Recognition and Smart Engineering System Design These papers are intended to provide a forum for researchers in the field to exchange ideas on smart engineering system design AI Trends Newsletter ,1992 *Advanced Technologies in Designing and Progressive Development of Manufacturing Systems* Tom Savu,Nicolae Ionescu,Constantin Gheorghe Opran,Iulian Tabără,Adrian Bruja,Luige Vladareanu,2015-05-18 Selected peer reviewed papers from joint International Conferences ICAMaT 2014 7th International Conference on Advanced Manufacturing Technologies ROBOTICS 2014 VIth International Conference on Robotics POLCOM 2014 International Conference of Technology for Polymeric and Composites Products October 23 24 2014 Bucharest Romania

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