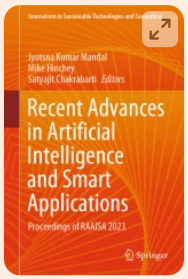


# Recent Advances in Artificial Intelligence and Smart Applications

## Proceedings of RAAISA 2023

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## Overview

**Editors:** Jyotsna Kumar Mandal, Mike Hinchey, Satyajit Chakrabarti

- Includes recent research presented at RAAISA 2023, held in Kolkata, India
- Presents research works in the field of artificial intelligence and smart applications
- Serves as a reference for researchers and practitioners in academia and industry

**Part of the book series:** Innovations in Sustainable Technologies and Computing (ISTC)

**Included in the following conference series:**

RAAISA: International Conference on Recent Advances in Artificial Intelligence & Smart Applications

Conference proceedings info: RAAISA 2023.

# About this book

The book includes original unpublished contributions presented in First International Conference on Recent Advances in Artificial Intelligence and Smart Applications (RAAISA 2023), organized by Department of CSE, University of Engineering and Management, Kolkata, India during 14 – 15 December 2023. The topics covered are progression of artificial intelligence techniques like smart agent-based systems, human-computer interaction technologies, reinforcement learning, sentiment analysis, recurrent neural networks and its applications, genetic algorithm, and neural networks.

# Keywords

Human-Computer Interaction Technologies
Genetic Algorithm Neural Networks
Smart Computing for Cyber-physical Systems
Artificial Intelligence
Reinforcement Learning, Sentiment Analysis
Deep Learning based Smart Systems
Privacy and Trust issues in Smart Computing
Smart Agent-based Systems
Recurrent Neural Networks and its Applications
Security
Augmented Reality/ Virtual Reality, IoT
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# About the editors

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Professor Mike Hinchey is former President of IFIP, the International Federation for Information Processing founded by UNESCO in 1960 and is Emeritus Director of Lero-the Science Foundation Ireland Centre for Software, and Professor of Software Engineering at University of Limerick, Ireland. Prior to joining Lero, Professor Hinchey was the Director of the NASA Software Engineering Laboratory. The holder of 30 US patents, in 2009 he was awarded NASA's Kerley Award as Innovator of the Year and is recognized in the NASA Inventors Hall of Fame. Professor Hinchey holds a B.Sc. in Computer Systemsfrom University of Limerick, an M.Sc. in Computation from University of Oxford and a PhD in Computer Science from University of Cambridge. Professor Hinchey is a Chartered Engineer, Chartered Engineering Professional, Chartered Mathematician and Charted Information Technology Professional, as well as a Fellow of the IET, British Computer Society, Engineers Australia, Engineers Ireland, and Irish Computer Society, of which he is also President. In 2018 he became an Honorary Fellow of the Computer Society of India and was the SEARCC Global ICT Professional of the Year 2018.

He was Chair of IEEE UK & Ireland Section for 2018-2019. He is the author/editor of more than 20 books and over 200 papers on various aspects of computing, software engineering, and autonomous systems. He is Editor-in-Chief of Innovations in Systems and Software Engineering: a NASA Journal (Springer) and Journal of the Brazilian Computer Society (Springer).

Satyajit Chakrabarti is Pro-Vice Chancellor, University of Engineering & Management, Kolkata and Jaipur Campus, India, and Director of the Institute of Engineering & Management, IEM. As the Director of one of the most reputed organizations in Engineering & Management in Eastern India, he launched a PGDM Programme to run AICTE approved Management courses, Toppers Academy to train students for certificate courses and Software Development in the field of ERP solutions. Dr. Chakrabarti was Project Manager in TELUS, Vancouver, Canada from February 2006 to September 2009, where he was intensively involved in planning, execution, monitoring, communicating with stakeholders, negotiating with vendors and cross-functional teams and motivating

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## Bibliographic Information


**Book Title**
Recent Advances in Artificial Intelligence and Smart Applications

**Book Subtitle**
Proceedings of RAAISA 2023

**Editors**
Jyotsna Kumar Mandal, Mike Hinchey, Satyajit Chakrabarti

**Series Title**
Innovations in Sustainable Technologies and Computing

**DOI**
https://doi.org/10.1007/978-981-97-3485-6

**Publisher**
Springer Singapore

**eBook Packages**
Intelligent Technologies and Robotics, Intelligent Technologies and Robotics (R0)

**Copyright Information**
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**Hardcover ISBN**
978-981-97-3484-9
Published: 22 September 2024

**Softcover ISBN**
978-981-97-5019-1
Due: 06 October 2025

**eBook ISBN**
978-981-97-3485-6
Published: 21 September 2024

**Series ISSN**
2731-880X

**Series E-ISSN**
2731-8818

**Edition Number**
1

**Number of Pages**
XII, 294

**Number of Illustrations**
24 b/w illustrations, 143 illustrations in colour

**Topics**
Computational Intelligence, Artificial Intelligence, User Interfaces and Human Computer Interaction,

Computer Imaging, Vision, Pattern Recognition and Graphics

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# Chapter 18
# An IoT-Based Smart Tracking Application Integrated with Global Positioning System (GPS)

**Ritika Chatterjee, Dola Sinha, Sovan Bhattacharya, Laxmidhar Biswal, Bappaditya Mondal, and Chandan Bandyopadhyay**

**Abstract** This study presents the development of a wireless system designed to accurately find objects and visually display their precise positions on a map. The instrument is specifically created to serve as a versatile tracking mechanism that facilitates accurate placement through the utilization of coordinates, namely longitude and latitude. The central processing unit, as well as the interface unit for facilitating communication with both hardware and software components, is a NodeMCU microcontroller equipped with a high-end Wi-Fi module. The NEO-6M GPS module is employed for the purpose of transmitting geographical coordinates and establishing a connection with satellites. The tracking system has been implemented using two

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J. K. Mandal et al. (eds.), *Recent Advances in Artificial Intelligence and Smart Applications*, Innovations in Sustainable Technologies and Computing,
https://doi.org/10.1007/978-981-97-3485-6_18