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Proceedings

2025 4th ICERA

Artificial Intelligence: Creating Tomorrow's World Today

STMIK EL RAHMA YOGYAKARTA

IEEE INDONESIA SECTION

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Preface

In an era of rapid technological advancement, artificial intelligence (AI) has emerged as one of the most significant innovations shaping our future. This proceeding, "Artificial Intelligence: Creating Tomorrow's World Today," offers a deep dive into how this technology is not only changing the way we work and live but also shaping aspects of our lives, from industry to education, health, and the arts. AI is now a tool and a partner in innovation that enables us to create solutions to global challenges.

Through comprehensive presentations and real-world examples from various fields, the authors take readers through the incredible potential of AI. The proceedings invite us to interact with new ideas and develop an understanding of how AI can be used ethically and responsibly. This exploration is not just about technology but also its impact on society, how we can adapt, and the importance of collaboration between humans and machines.

This proceeding is an essential guide for professionals, academics, and anyone seeking to understand the impact of AI in the modern era. With an informative and inspiring approach, it is hoped that readers will see AI as a tool and as something that can shape a better world. Let us explore the potential of AI together and contribute to creating a brighter future for future generations.

Guest Editor
Ferry Wahyu Wibowo

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Welcome Speech

Welcome to the 2025 4th International Conference on Electronics Representation and Algorithms (ICERA). We are proud to welcome participants, speakers, researchers, and invited guests from all over the world. The contributions of algorithms, artificial intelligence (AI), and electronic technology have had a significant impact on human life and the advancement of science.

With the use of intelligent algorithms, we can analyze big data to gain deep insights, solve complex problems, and improve decision-making in various areas. AI and electronics play an important role in innovation across health, education, industry, and other sectors. This enables the development of more accurate diagnostic systems, personalized learning, and process automation that enhances efficiency. The implementation of this technology not only improves the quality of life but also encourages the advancement of science by providing new tools and methods for research.

During this conference, we will explore the various applications and impacts of algorithms, AI, and electronics. We hope that each participant can contribute to productive discussions, share knowledge, and formulate concrete steps to harness these innovations for the common good. Let's explore together how algorithms and technology can change lives and drive the advancement of science for a better future.

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Eko Riswanto, S.T., M.Cs.

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A B C D E F H I M N O P R S T U

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Assessment of Monitoring Data and Performance of a 4.5 kWp Residential Rooftop Solar PV System in Surabaya, Indonesia

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Elieser Tarigan **All Authors**

Abstract:
This study presents a performance analysis of a 4.5 kWp residential rooftop photovoltaic (PV) system installed in Surabaya, Indonesia. The system, comprising monocrystalline modules, a high-efficiency inverter, and an export-import energy meter, was monitored, recorded, and analyzed over a full year using the iSolarCloud platform. Daily energy outputs ranged from 7.2 kWh to 25.5 kWh, with an annual yield of 6,122 kWh and a specific energy output of 1,360 kWh/kWp. Seasonal and weather-related variations were significant, with performance on sunny days averaging 23.2 kWh and dropping to 7 kWh on rainy days. The study highlights the importance of continuous monitoring and the impact of environmental conditions on PV performance. The study underscores the importance of understanding and anticipating seasonal and daily weather patterns to optimize the efficiency and reliability of PV systems. These findings offer valuable insights for optimizing urban PV installations and supporting Indonesia's efforts toward sustainable energy adoption.

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