

ISSN: 1656-1996
Vol 7, Issue 8
Aug. 2025

Journal of Research in Science and Engineering

Journal of Research in Science and Engineering (JRSE)

ISSN: 1656-1996



Bryan House Publishing Limited
contact@bryanhouspub.org
www.bryanhouspub.org
Telephone:
0044-121-7813744



BRYAN HOUSE PUBLISHING LIMITED
Multidisciplinary Academic Journal Publisher

Journal of Research in Science and Engineering (JRSE)

ISSN 1656-1996

Editor-in-Chief

Dr Taylor M. Matt, University of Macquarie, Sydney, Australia

Editorial Board Members

Dr. Markus Haag, Department of Management and Business Systems, University of Bedfordshire, United Kingdom

Professor Nathan N. Elekwa, University of Nigeria, Nsuka, Nigeria

Dr. Vin vng Department of computer, University of Bedfordshire, United Kingdom

Dr. Stephen Mackson, Department of Management and Business Information Systems, University of Bedfordshire, UK

Dr. Make Smart, Faculty of Mathematics and Natural Science, University of Augsburg, Germany

Dr. Matthew Peters, Department of computer Science, University of Western Sydney, Australia

Deepankar Choudhury, Associate Professor, Department of Civil Engineering, Indian Institute of Technology (IIT) Bombay, Powai, Mumbai, India

Copyright

Journal of Research in Science and Engineering (JRSE) is licensed under a Creative Commons-Non-Commercial 4.0 International Copyright (CC BY-NC4.0). Readers shall have the right to copy and distribute articles in this journal in any form in any medium, and may also modify, convert or create on the basis of articles. In sharing and using articles in this journal, the user must indicate the author and source, and mark the changes made in articles. Copyright © Bryan House Publishing Limited. All Rights Reserved.

Journal of Research in Science and Engineering (JRSE)

ISSN 1656-1996

Aims and Scope

Introduce the new peer-reviewed, open access journal entitled *Journal of Research in Science and Engineering (JRSE)* is an international open access journal publication by Bryan House Publishing Limited.

All manuscripts must be prepared in English and are subject to a rigorous and fair peer-review process. The journal publishes original papers including but not limited to the following fields:

- Aerospace Engineering and Technology
- Architectural Engineering and Technology
- Artificial Intelligence Technology
- Automatic Speech Recognition Technology
- Bioprocess Engineering
- Chemical Technology
- Civil Engineering
- Composites Engineering
- Control Engineering
- Data Engineering
- Ecological Science and Technology
- Electrical and Computer Engineering
- Engineering Education
- Engineering Geology
- Engineering Physics
- Environmental Sciences
- Food Science and Engineering
- Genetic Engineering and Biotechnology
- Green Energy Engineering and Technology
- Hydraulic Engineering
- Industrial Technology
- Information Technology
- Manufacturing Engineering and Technology
- Materials Science and Engineering
- Medical and Biomedical Engineering
- Micro-System Technology
- Military Technology and Equipment
- Nano-System Technology
- Naval Engineering
- Nuclear Science and Technology
- Opto-Mechatronics
- Particle Physics
- Petroleum Engineering
- Pharmaceutical Engineering
- Polymer Engineering
- Reservoir Engineering
- Security Engineering
- Structural Engineering

We are also interested in: 1) Short Reports - 2-5 page papers where an author can present either preliminary data or an idea with theoretical background but has not yet completed the research needed for a complete paper; 2) Book Reviews - Comments and critiques.

Bryan House Publishing Limited.

E-Mail: contact@bryanhousepub.org

Official Website: www.bryanhousepub.org

Address: Flat 4, Huntingdon House Faulkner Farm Drive Edington,

Birmingham West Midlands, United Kingdom, B23 7XF.

Telephone: 0044-121-7813744

Journal of Research in Science and Engineering (JRSE)

ISSN 1656-1996

Volume 7, Issue 8 • August 2025

CONTENTS

1 **Smart City Optimization Through AI-Driven BI Systems: Multimodal Data Fusion for Urban Mobility and Energy Efficiency**
Masroor Akhtar

7 **Technical Implementation of Affective Computing and Ethical Governance Mechanisms**
Manisha Singh

10 **Latency-Aware Round Robin Variants for Heterogeneous Workload Allocation**
Naresh Raj K

14 **Consistency Models in Distributed Microservices: Comparative Evaluation of Event Sourcing vs. Saga Pattern Implementation**
Musaed Autairi, Jawaher Ali Alhowaish

23 **Pedological Analysis of Viticulture Soils in Nashik District, Maharashtra**
Sairam Incubator

27 **Classification Model for Lumbar Muscle Fatigue Evaluation Based on Machine Learning**
Bo Deng

33 **A Hybrid Spiral-Biased Particle Swarm Optimization with Black-winged Kite Algorithm for Mobile Robot Path Planning**
Lanyue Yang, Wei Fan

39 **Numerical Simulation Study on Influencing Factors and Response Patterns of Loop Source Semi-Airborne Transient Electromagnetic**
Tuanbin Liao, Guoqiang Zhang, Bingbing Chen, Lizhi Du

45 **Evaluation of Infrastructure Resilience and Analysis of Obstacle Factors in Northeast Sichuan Economic Zone**
Yikai Wang

53 **Transition Pathways from Robotic Process Automation to Cognitive Workflow Orchestration**
Rinchen Dorji

57 **Hybrid Market Research Methodologies in Financial Product Design: Integrating Sentiment Analysis with Discrete Choice Modeling**
Utkarsh Shukla

62 **Simulation and Design of a Temperature Compensation Circuit for a Radio Frequency Power Amplifier**
Yonghua Ma, Jiong Gao, Boyi Chen

65 **Research and Practical Application of Digital Technology-Based Paperless Order Tracking Methods for Clothing**
Enfeng Ji

CONTENTS

72 Adversarial Robustness in AI Authentication Systems: Mitigating Threat Vectors Through Gradient Masking and Ensemble Defense

Abdel Hady

76 Threat-Model-Driven Incident Management for AWS: Cost-Benefit Analysis of Elastic Logging Architectures with Zero-Trust Security

Anis Mekhaimer

87 Optimized YOLOv7 Deployment for Underwater Surveillance Drones

Omar TabaanAlenezi, Shereen Mlama