[2] Kapil Shukla, Parag Shukla, "Common Pitfalls in Web Server Remote Code Execution Security." Nanotechnology Perceptions Vol. 20 No. 7, Page: 141-148, https://nano-ntp.com/index.php/nano/article/view/3816/2876 SCOPUS, UGC Care Listed Journal - Nanotechnology Perceptions ISSN:1660-6795

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Common Pitfalls in Web Server Remote Code Execution Security

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Abstract: The presence of Remote Code Execution (RCE) vulnerabilities on the web server poses a high risk of exploitation, compromising sensitive data. This study examines the prevalence of RCE vulnerabilities and the most common pitfalls, such as broken authentication, session management flaws, and misconfigured access controls. Recent advances include compiler-assisted encryption and deep learning-based optimizations that may help mitigate these issues. The role of educational tools in promoting secure coding practices has also been discussed and emphasized to incorporate integrated security training within development environments. However, all these advances notwithstanding, there is still an enormous gap in the adaptation of frameworks to emerging threats, which again calls for real-time threat intelligence and AI-powered detection mechanisms. This review synthesizes the existing literature and identifies future directions for closing RCE vulnerabilities through innovative, universally applicable solutions. This work aims at improving understanding and the ability to mitigate RCE vulnerabilities inside web server environments through bridging academic insights with practical applications.

Keywords: Remote Code Execution (RCE), Server Security, Secure Coding Practices, Isolation and Resource Management

1. Introduction

Remote code execution has already become the backbone of modern distributed computing through cloud services and software-driven processes. This model allows developers to offload computationally expensive tasks onto powerful servers while optimizing scalability and efficiency for cloud-native apps. However, it creates significant vulnerabilities in Remote Code Execution that may compromise performance, security, and resource consumption.

The main threat posed by RCE is security. A few case studies that have come up are Holm et al. (2012), Hassan et al. (2018), and Sayar et al. (2022), which reveal that security misconfigurations or insufficient isolation of the session lead to vulnerabilities within cloud infrastructures, such that attackers exploit weaknesses, like RCE, for acquiring credentials or utilize mechanisms of elevated privileges to siphon off confidential data.

Besides security-related problems, most of the performance-related issues basically encompass dynamic scalability and resource management. High availability-oriented systems utilizing RCE tend to be subject to bottlenecks, degradation of service quality, and transgression or misuse of critical data (Gupta et al., 2017; Li et al., 2020). Sound frameworks with secure yet performance-optimized RCE settings can alleviate these challenges.

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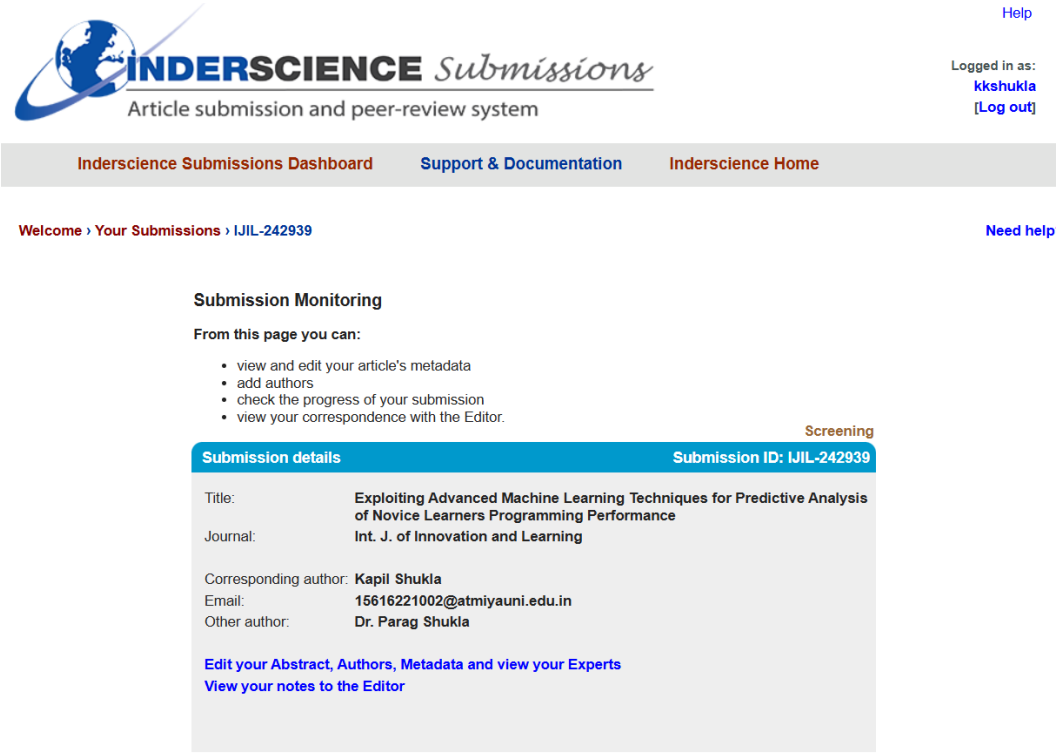
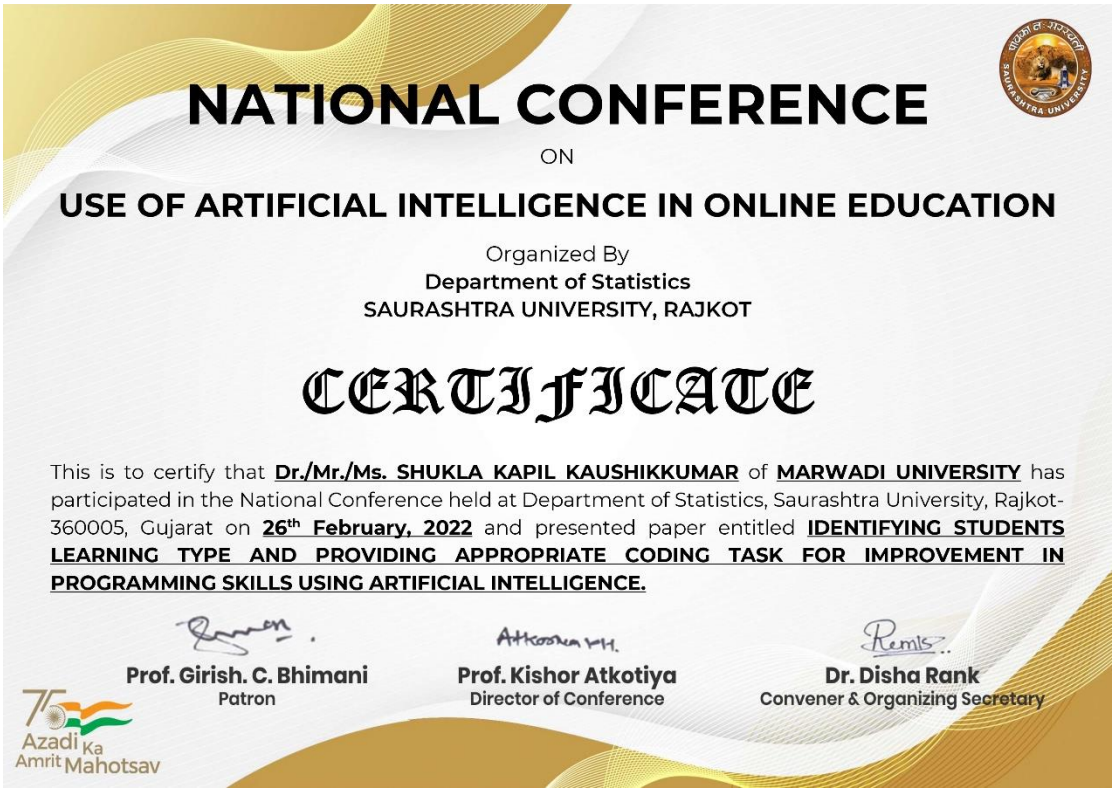
[3] Kapil Shukla, Dr. Parag Shukla, "Exploiting Advanced Machine Learning Techniques for Predictive Analysis of Novice Leaners Programming Performance," International Journal of Innovation and Learning (IJIL),(print) [In Communication] SCOPUS, UGC Care Listed Journal - International Journal of Innovation and Learning (IJIL), ISSN: 1471-8197



National Conferences

[1] Kapil Shukla, Dr. Parag Shukla, *"Identifying Students Learning Type and Providing Appropriate Coding Task for Improvement in Programming Skills using Artificial Intelligence,"* National Conference on Use of Artificial Intelligence in Online Education, Department of Statistics Saurashtra University, Rajkot [Paper Presented]



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This is to certify that **Dr./Mr./Ms. SHUKLA KAPIL KAUSHIKKUMAR** of **MARWADI UNIVERSITY** has participated in the National Conference held at Department of Statistics, Saurashtra University, Rajkot-360005, Gujarat on **26th February, 2022** and presented paper entitled **IDENTIFYING STUDENTS LEARNING TYPE AND PROVIDING APPROPRIATE CODING TASK FOR IMPROVEMENT IN PROGRAMMING SKILLS USING ARTIFICIAL INTELLIGENCE.**

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