



American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

Project Title:

Integrated Application Usage Tracking & Parental Control System

Supervised by:

TONNY SHEKHA KAR

A Software Engineering Project Submitted
By

Semester: Summer_23_24		Section: H	Group Number: 09	
SN	Student Name	Student ID	Contribution (CO3+CO4)	Individual Marks
1	A. F. M. RAFIUL HASSAN	22-47048-1		
2	MD. ASHIKUZZAMAN ABIR	22-47006-1		

1. PROJECT PROPOSAL

1.1 Background to the Problem

Today's digital landscape presents challenges in maintaining efficient performance and resource allocation due to the widespread use of applications across platforms. Organizations mainly depend on these applications; but, in the absence of appropriate monitoring and control systems, they face into the risks of resource misuse and failure. Considering this standpoint, the goal of our project is to create an effective application monitoring and usage restriction system with parental control system. We deliver real-time insights into user behavior and application performance with powerful monitoring tools. Administrators can also impose limitations to guard resources, maximize efficiency, stop misuse, and enhance user experience. In the end, our solution gives organizations the ability to work in the world of technology more effectively.

The necessity for monitoring applications and limit their usage from the dynamic nature of modern digital environments and the growing dependence on applications for business operations. With the proliferation and complexity of applications, there is an increased risk of performance issues, resource contention, and security vulnerabilities. Without proper monitoring and control measures, organizations face the threat of service disruptions, compromised user experiences, and inefficient resource allocation. In today's connected world, achieving client demands and remaining competitive requires not only ensuring smooth application operation but also securing crucial assets and maintaining service quality standards.

1.2 Solution to the Problem

The project's goal is to create a comprehensive usage limitations and application monitoring system that will tackle the issues raised by the rapidly changing digital environment. This involves utilizing powerful monitoring applications to provide real-time insights into application performance, resource usage, and user behavior.

The proposed solution for addressing the challenges of application monitoring and usage limitation involves developing a comprehensive software platform with strong monitoring tools and usage limitation, restriction features. This solution is unique in that it gives administrators the ability to set thresholds and enforce restrictions to stop abuse or excessive usage while providing real-time data on application performance and resource usage.

The suggested system would transform application monitoring and usage restrictions by leveraging modern technologies such as machine learning algorithms and analytical prediction. It improves system reliability and safety rapidly by using AI-driven anomaly detection to identify and fix significant issues with performance later on.

Basic Functionalities:

- **Real-Time Performance Monitoring:** Visual representation of application performance metrics such as response times, error rates, and throughput. Monitor CPU, memory, disk I/O, and network usage in real time.
- **Usage Limitation and Control:** Allow administrators to define usage limits for resources and applications. Manage user roles and permissions to enforce application usage policies.
- **AI driven Anomaly Detection and Alerts:** Use machine learning to identify unusual patterns in application performance and user behavior. Send real-time alerts via email, SMS, or other channels when anomalies or threshold breaches are detected.
- **User Behavior Analysis:** Monitor individual user sessions for detailed insights into behavior and experience. Generate reports on user activity, highlighting areas for optimization.
- **Reporting and Visualization:** Generate detailed reports on application performance, resource usage, and user behavior. Use graphs, charts, and heatmaps to present monitoring data in an understandable format.
- **Security and Compliance:** Ensure compliance with data privacy regulations by anonymizing and securing user data. Maintain detailed logs of all monitoring activities and administrative actions. Track and respond to security incidents, such as unauthorized access or data breaches.

Targeted Users & Benefits: The proposed solution targets IT administrators, system operators, and application developers responsible for digital infrastructure management. IT administrators gain real-time insights for proactive troubleshooting, allowing them to quickly identify and resolve issues, thus minimizing downtime. While system operators enforce usage limitations to prevent troubleshooting. Improved insight into user behavior helps application developers create more effective applications.

Contribution to Scientific Development: The project makes significant improvements to the field of application monitoring and usage limitation by using innovative methodologies and technologies to provide valuable insights into application performance, resource utilization, and user behaviour. The meticulously documented results serve as a foundation for future research, which is spread through published articles and conferences, developing innovation and teamwork within the scientific community.

Literature Review: The existing literature has extensively investigated application monitoring and usage limitations, emphasizing their importance in improving performance and resource allocation in digital environments. While previous research has focused on aspects such as performance monitoring and resource utilization optimization, many studies have approached these issues separately, ignoring their interconnected nature.

Existing Studies: Existing research on application monitoring and usage restriction includes monitoring performance, allocation of resources, and user behavior analysis. Some concentrate on real-time performance monitoring methods that apply data analysis and anomaly detection, while others look at resource allocation optimization strategies. The study also looks into user behavior analysis in order to make informed resource allocation decisions.

Existing Software Solution: Existing software solutions for integrated application usage tracking & parental control system, such as New Relic, Datadog, and Prometheus, provide robust monitoring but may not include extensive usage limitation features. Cloud service providers have some constraints but lack adaptability for complicated environments. Our system combines advanced monitoring tools with customizable usage limitations, implementing technologies such as machine learning to enable proactive monitoring and dynamic modification based on workload and behavior.