

Assignment 2

Artificial Intelligence In Education Sector

Problem Statement:

Artificial intelligence plays an important role in the education sector, as it contributes to improving the quality of learning, providing advanced and interactive educational materials that motivate students, personalizing content for students, and reducing the burden on teachers through smart tools and precise analyses of student performance data to identify their strengths and weaknesses.

The significance of this problem is the importance of understanding the development of artificial intelligence in education and the main challenges it faces in terms of security, the user gap, and the lack of information and studies in this field. evaluating solutions, and proposing a robust framework aligned with the identified problem challenges.

Research Objectives:

1. To explain the importance of using artificial intelligence in education:

- High Analytical Accuracy: Results showed that AI achieved an accuracy rate of up to 99.6% in identifying complex patterns.
- Resource Efficiency: Models like LightGBM demonstrated the ability to operate at high speeds with low memory usage, making them ideal for constrained systems.
- Handling Big Data: The AI model successfully processed a dataset containing over one million records, outperforming traditional manual or rule-based methods.
- Intelligent Automated Classification: The ability to extract key features and categorize behaviors (benign vs. malicious) with superior precision.

2. To detect attacks and the level of security in artificial intelligence applications:

- Developing detection and mitigation mechanisms for Version Number Attacks (VNA): All studies aim to find effective ways to identify and prevent attacks that manipulate the version number in the RPL protocol from destabilizing the network.
- Designing lightweight security solutions: Focusing on minimizing resource consumption (such as energy, memory, and processing) to ensure these solutions are suitable for resource-constrained IoT devices.
- Improving network performance and stability during attacks: The research aims to ensure the network continues to operate efficiently, maintaining topology stability, reducing latency, and increasing the Packet Delivery Ratio (PDR) even in the presence of malicious nodes.
- Implementing distributed and collaborative monitoring techniques: Seeking to replace traditional centralized systems with distributed models (such as parent supervision or the Claim algorithm) to increase scalability and reduce single points of failure.

- Using Artificial Intelligence for threat detection: A specific goal in some studies is to employ machine learning algorithms (such as LightGBM) to achieve high accuracy in distinguishing between normal behavior and attack behavior.

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