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**Informatics Institute of Technology**

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**Enhanced Employee Performance and Management System**

A Dissertation by

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## ABSTRACT

The evaluation of an employee continues to be a complicated issue in industries in general, and especially in e-commerce, retail, and supply chain management, where frequent and accurate performance measurement is crucial. Previous studies, which analyze static performance indicators or evaluate performance based on past results, are not suitable for dynamically changing industries. Moreover, employee retention, which plays an important role in HR Management, is often affected by the lack of transparency in performance evaluation systems. This research seeks to fill these gaps by creating an Employee Performance Management System (EPMS) that offers predictive analytics, balanced and timely feedback and uses explainable AI (XAI).

The proposed system is based on LSTM networks and ARIMA models that provide predictive data updated every frequent number of hours for better decision-making to enhance performance. The use of XAI approaches such as SHAP guarantee that all employees have a clear perspective of how the system arrives at a specific prediction, hence enhancing the organizational objectives. This development methodology involves a process of expert interviews, iterative prototyping and feedback integration, to develop the architecture of the system that has scalability, adaptability and modularity with ease of integration. Thus, this research extends the current understanding of how enhanced AI techniques integrated with explainable methods may help bring the HR practices to a higher level of performance management.

**Keywords:** Employee Performance, eXplainable Artificial Intelligence (XAI), SHapley Additive exPlanations (SHAP), Long Short-Term Memory (LSTM), Auto-Regressive Integrated Moving Average (ARIMA)

### Subject Descriptors:

- Computing methodologies → Machine learning → Machine learning algorithms → Feature selection
- Information systems → Information retrieval → Retrieval models and ranking → Learning to rank