Proposed Title

“Machine Learning-Based Player Churn Prediction and Retention Strategies in Free-to-Play Games”

Abstract

Player churn is a critical challenge in free-to-play (F2P) games, where a small fraction of highly active players contributes the majority of revenue. Churn, defined as the permanent disengagement of a player, results in significant revenue loss, reduced active user base, wasted development resources, and potential damage to a game’s brand image. Players may leave due to gameplay difficulties, repetitive content, excessive advertisements, lack of social engagement, technical issues, or weak reward systems.

In this study, we propose a **Machine Learning-based Churn Prediction System** that leverages player behavior data, including login frequency, session duration, in-game actions, and social interactions, to accurately forecast churn within a defined period. Using models such as Random Forest, XGBoost, and Neural Networks, the system identifies at-risk players and provides actionable insights.

Furthermore, we integrate **personalized retention strategies**, including targeted bonuses, dynamic difficulty adjustment, and community engagement features, guided by Explainable AI (XAI) to clarify the reasons behind churn predictions. By combining prediction, intervention, and measurement, the proposed approach aims to create a **Churn Prevention System** that enhances long-term player retention, maximizes revenue, and improves overall game experience.

Title

“Machine Learning-Based Smart Agriculture: Crop Yield Prediction and Farm-to-Consumer Optimization”

Abstract

Smart Agriculture, or Farm-to-Consumer Optimization, is an approach that aims to make agricultural production and supply systems more **intelligent and efficient**. Traditional agricultural practices often face challenges: inaccurate crop yield prediction, imbalance between supply and demand, and inefficient use of fertilizers or pesticides. To address these issues, we propose a **Machine Learning (ML)-based system**.

The proposed system analyzes **historical and real-time data** to provide crop yield forecasts (Time-Series Prediction), optimize pesticide and fertilizer management (Reinforcement Learning), and detect crop diseases at an early stage (Image Recognition). This approach helps farmers make **data-driven decisions**, reduces crop losses, improves resource utilization, and increases overall yield.

Through this research, we aim to develop a **decision support system** that is not only profitable for farmers but also environmentally friendly and supportive of sustainable agriculture.

Title

“Early Detection of Mental Health Risks Using Daily Smartphone and Social Media Data with Explainable AI”

Abstract (English Version)

Mental health issues such as stress, anxiety, and depression are increasingly prevalent, yet early detection remains a significant challenge. Traditional assessment methods, relying on periodic surveys or clinician visits, often result in delayed intervention. In this research, we propose a Machine Learning-based system that leverages daily smartphone usage data (steps, sleep, screen time, app usage) and social media activity (sentiment analysis, posting patterns) to predict mental health risks in real-time.

The system employs multi-modal feature extraction and time-series models (LSTM/GRU), optionally integrating social network analysis using Graph Neural Networks to capture temporal and relational patterns. Explainable AI techniques (SHAP/LIME) are incorporated to provide interpretable predictions, highlighting the factors contributing to elevated risk. By combining continuous passive monitoring, predictive modeling, and explainable insights, the proposed approach aims to enable early intervention, support clinical decision-making, and improve overall mental health outcomes while maintaining user privacy and ethical data handling.