# ANALYSIS & FORECASTING GAMING TRENDS

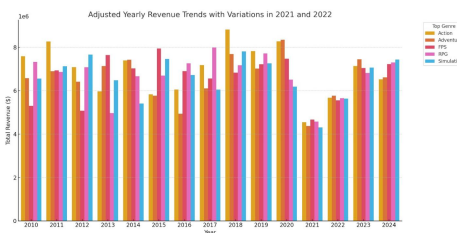Team **INSIGHT DECODERS**: Hemanath, Rohith, Kaushik, Hemant

## INTRODUCTION

The gaming industry continues to evolve rapidly, driven by technological innovation, user engagement, and revenue growth. This project forecasts gaming trends using historical data (March 2011 to November 2024) and predicts future metrics (up to 2028) using XGBoost, a robust machine-learning algorithm. Key insights include Daily Active Users (DAU), revenue trends, and new registrations across platforms like PC, console, mobile, and VR. These predictions help identify growth opportunities, optimize platform-specific strategies, and support decision-making for the gaming industry.

## METHODOLOGY

The dataset spanned multiple platforms, including PC, Console, Mobile, and VR, allowing for a comprehensive analysis of gaming trends across diverse user bases. To ensure the forecasts were reliable, the model incorporated recursive predictions, enabling insights into long-term trends up to 2028. Seasonal patterns such as spikes during holiday periods were effectively captured, highlighting the cyclical nature of user engagement and revenue. The combination of historical data, engineered features, and advanced machine-learning techniques ensured that the model could not only predict near-term trends but also provide actionable insights for strategic planning and investment decisions in the gaming industry. The inclusion of platform-specific trends further enhanced the model's granularity, enabling tailored forecasts that cater to the unique growth trajectories and user behaviors of each platform, thereby empowering decision-makers with targeted strategies for sustained success. By leveraging these insights, the gaming industry can anticipate emerging opportunities, address potential challenges, and align future developments with evolving market demands and user expectations.

## EDA



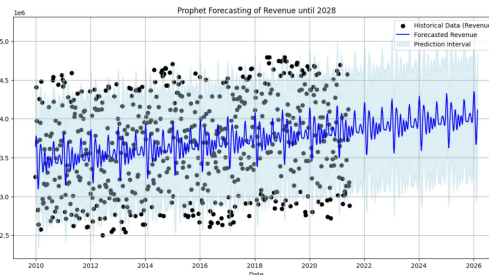Adjusted Yearly Revenue Trends with Variations in 2021 and 2022

The chart showcases yearly revenue trends across key gaming genres from 2010 to 2024, with notable spikes aligned with major real-world events. The significant increase in 2020 corresponds to the release of next-generation consoles like the PS5 and Xbox Series X, driving growth in Action and Adventure genres tied to flagship titles.
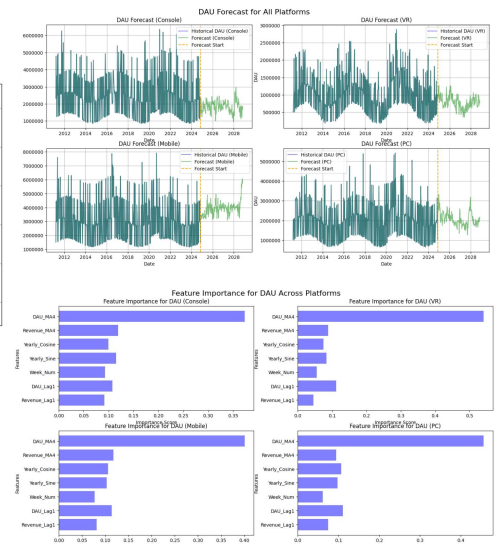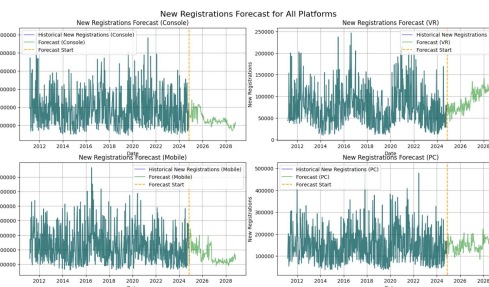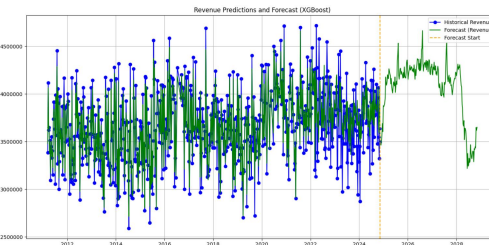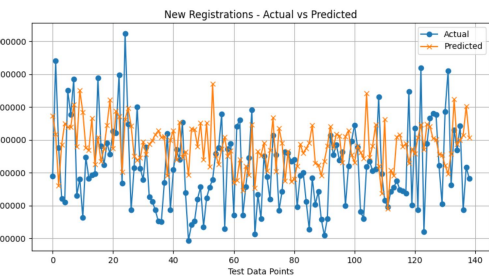
The rise in RPG and Simulation genres during 2020 and 2021 reflects increased demand for immersive games during the pandemic. A dip in 2021 suggests temporary market saturation after the PS5 launch, followed by recovery in 2022 due to ongoing game releases and updates. These trends highlight the importance of timing game launches with technological advancements and peak user interest periods.

## MODEL VISUALIZATIONS

### PROPHET



Prophet Forecasting of Revenue until 2028

### XGBOOST



New Registrations - Actual vs Predicted



Revenue Predictions and Forecast (XGBoost)



New Registrations Forecast for All Platforms



DAU Forecast for All Platforms



Feature Importance for DAU Across Platforms

The insights derived from the analysis and forecasts provide a roadmap for strategic decision-making in the gaming industry. The steady growth in revenue and DAU highlights the increasing engagement of users and underscores the potential for expanding platform-specific strategies. Seasonal trends, such as heightened activity during holidays, offer actionable opportunities for targeted marketing and content releases. The superior performance of PC and Mobile platforms compared to VR and Console indicates where investments should be prioritized to maximize returns. Additionally, the robust feature importance analysis validates the critical role of historical metrics and seasonal components, ensuring the reliability of the predictions. These inferences not only guide immediate actions but also support long-term planning and innovation, enabling the industry to stay competitive in a rapidly evolving landscape.

## CONCLUSION

The current model can be refined further by integrating additional predictors such as marketing expenditures, user feedback, and global gaming trends to improve forecast accuracy. Developing interactive dashboards based on these forecasts will enable real-time decision-making and adaptive strategies. Expanding the analysis to include niche segments such as indie games and esports will provide a comprehensive view of the gaming industry's evolving dynamics. These steps will ensure that the forecasts remain relevant and actionable as the industry continues to grow.