**🎮 Video Game Sales Analysis Report**

**1. 📂 Dataset**

* Source: Kaggle – Video Game Sales
* Size: **16,598 rows × 11 columns**
* After cleaning (removing missing values): **16,327 rows**
* Key fields:
  + Name, Platform, Year, Genre, Publisher
  + NA\_Sales, EU\_Sales, JP\_Sales, Other\_Sales, Global\_Sales

**2. 🔎 Exploratory Data Analysis (EDA)**

* Top publishers: **Nintendo, Electronic Arts, Activision**
* Most popular genres: **Action, Sports, Shooter, Role-Playing**
* Global sales peaked between **1995 – 2008**, then declined steadily.
* Largest market: **North America**, followed by **Europe** and then **Japan**.

**3. 📊 Visualizations**

* **Line Chart**: Global sales trend over time (peak around 2008).
* **Pie Chart**: Genre distribution → Action & Sports dominate.
* **Bar Chart**: Top 10 publishers by global sales → Nintendo leads.
* **Heatmap**: Strong correlation between **NA\_Sales & EU\_Sales** (≈0.8), while **JP\_Sales** shows distinct patterns.

**4. 🔮 Forecasting**

**ARIMA**

* Model: ARIMA(2,1,2)
* Forecasted future global sales.
* Predicted a gradual decline post-2016.

**Prophet**

* Applied with **yearly seasonality**.
* Showed similar trend but with less accuracy compared to ARIMA.

**5. 📏 RMSE Comparison**

Evaluation on the last 5 years (test set):

* **ARIMA RMSE = 302.7** ✅ (more accurate)
* **Prophet RMSE = 408.0**

**6. 📝 Conclusion**

* Video game sales **peaked in 2008**, then dropped over time.
* **Nintendo** is historically the strongest publisher.
* Best-selling genres: **Action & Sports**.
* **North America** remains the largest market.
* **ARIMA outperformed Prophet** in forecasting accuracy.