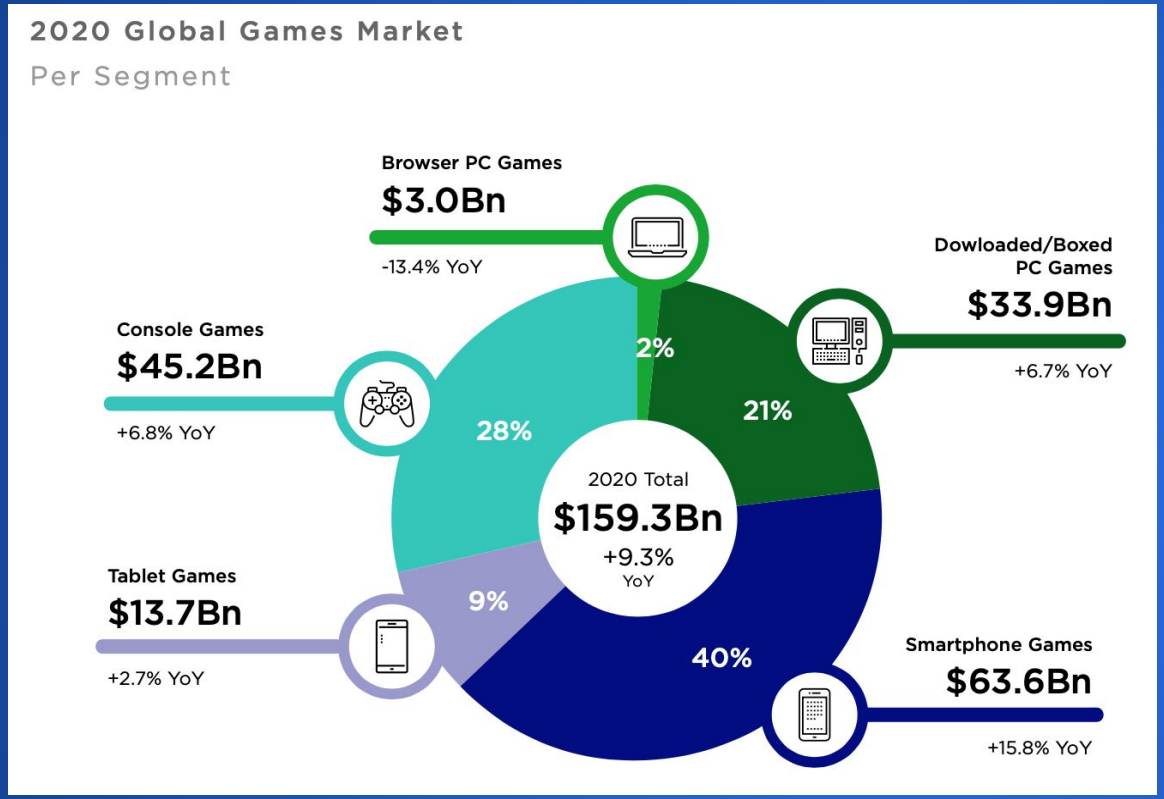
Predicting The Future Of Gaming

Topic

Video games have been around since the mid-1900s, but it was not until milestones such as the release of PacMan and Nintendo’s creation of Donkey Kong in 80s that the industry really started to boom. Through the eras of arcade gaming, the development of multiplayer games, and then to the creation of home gaming consoles -the population of global players has steadily continued to rise [1].



In 2020 alone, the gaming industry has yielded a total revenue of 159.3 billion -up 9.3% from 2019.

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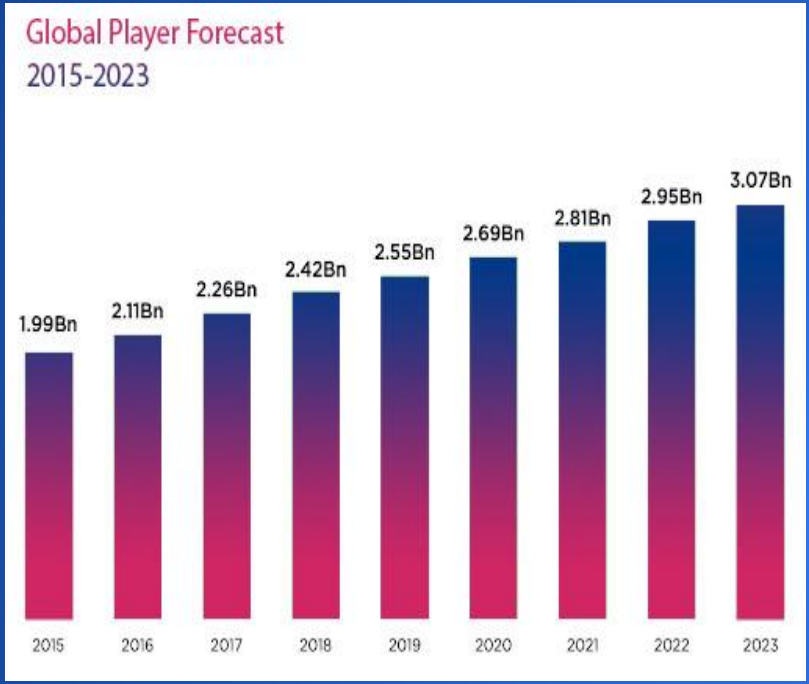
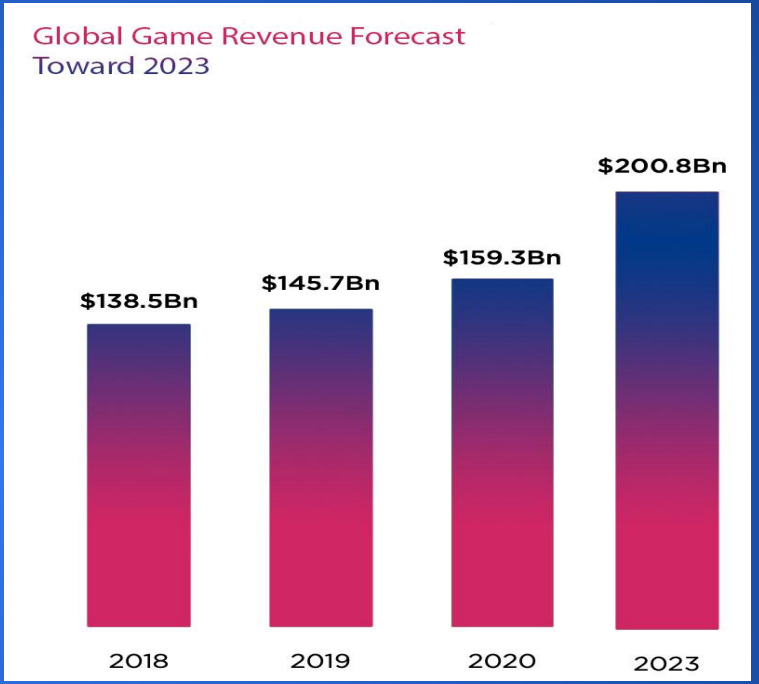




NewZoo

It has also accounted for 2.7 billion players globally -up 5.3% from 2019. In fact, it is forecasted that the gaming market revenue will grow to $200.8 billion and the global player count will rise to 3.07 billion by 2023. [2]

FunPlus Phoenix, winners of the 2019 League of Legends World Championship, took home $2.5 million in prize money (Joao Ferreira/ESPAT Media)

Man waits in line 30 hours at GameStop for a PS5

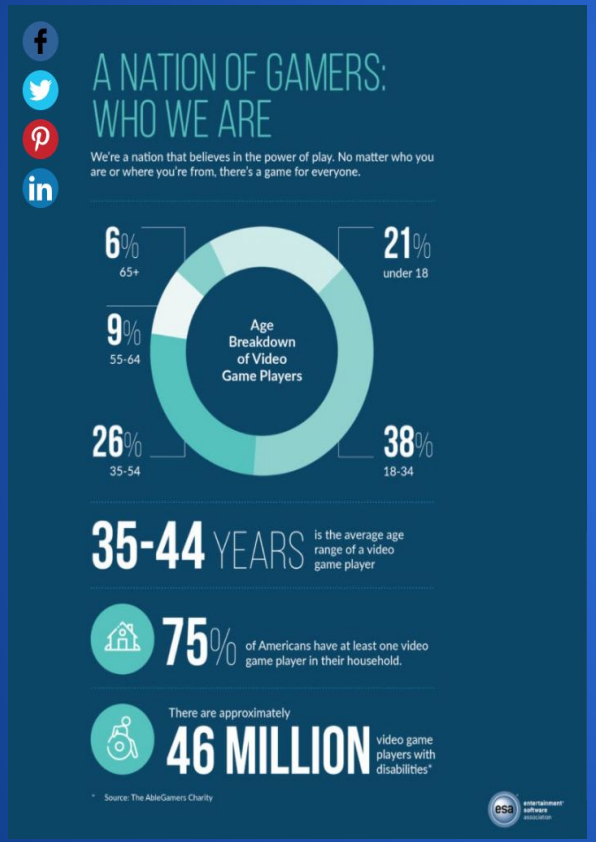
Among Us Available On Nintendo Switch With Cross-Play

EA To Buy Codemasters For $1.2 Billion

A Space Jam Game Is Coming To Xbox, And Fans Are Designing It

PS5, Switch Sales Drive Sony And Nintendo Stock To Highest Point In Over A Decade

Who, Why, and How



Purpose

The reason we selected this topic is to truly understand and analyze the increasing popularity of video games and the potential revenue that can be made in the gaming industry. We will trend historical gaming data to analyze what factors contribute to making a game successful and what determines if a game is successful. By doing so, it becomes possible to aid publishers and developers in releasing products aligned with current and future consumer interests.

Questions to Answer

What Makes a video game successful ?

- What genre of games is the most successful across all platforms ?
- Do cross platforms games sell better than singular platforms ?
- Do video games that are single player sell better than multiplayer ?
- Do video games sell better digitally or as hard copies in stores ?
- How does Metacritic’s ratings correlate to video game sales ?

What is the best time to release a video game ?

- Do video games sell better in a certain time of the year ?
- How do the holidays affect video game sales ?
- How does world events affect video games ?

How does demographic / location effect video game sales?

- What part of the world plays / purchases the most games ?
- What demographic plays / purchases the most video games ?

Description of Data Source

- Data was scraped from metacritic.com -a leading review site for video games, as well as TV shows and movies.
- Data was imported from a Kaggle video game sales data set (vgsales.csv) [3]
- Data was then cleaned and formatted properly for further analysis.

Database

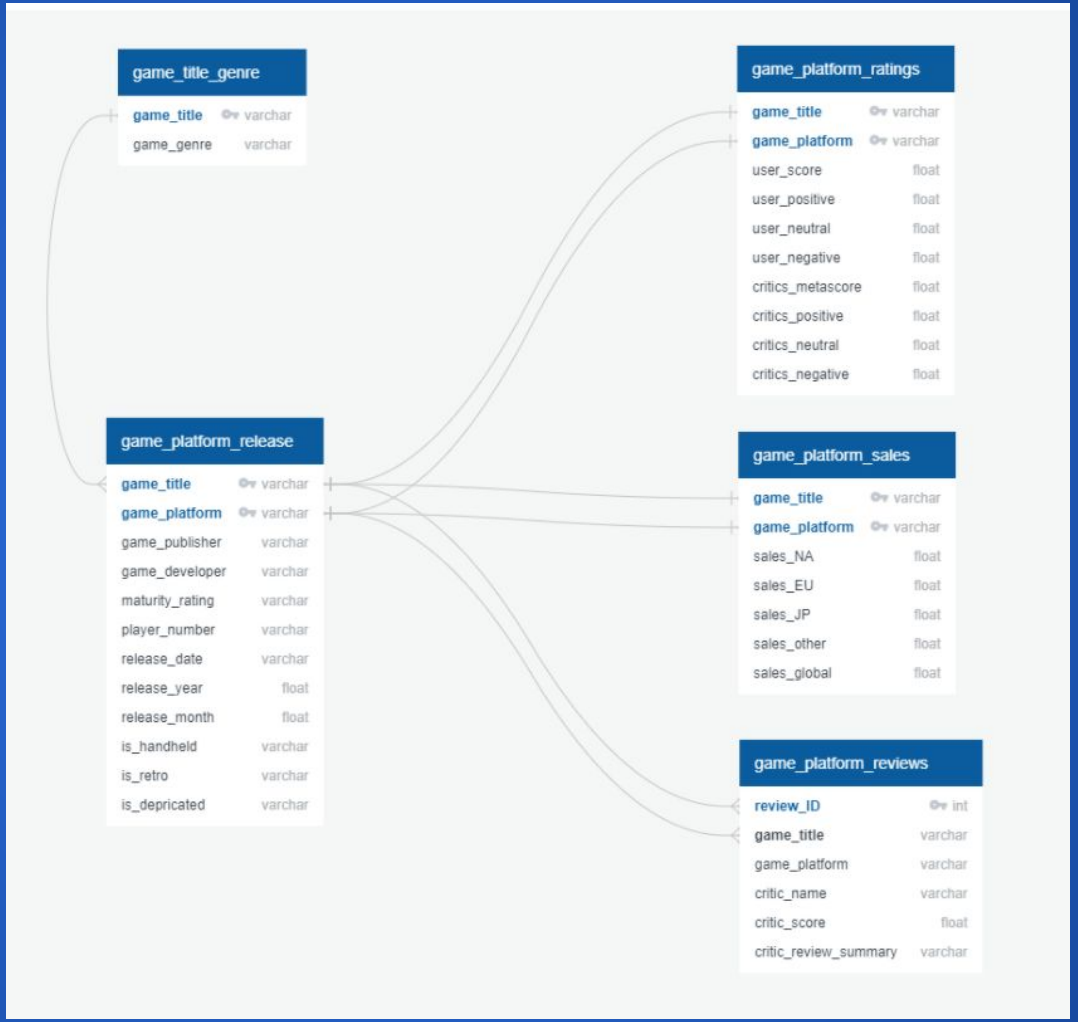
1. The postgres table was imported to deep learning script using SQL Alchemy

```
# Grab table from postgres
db_string = f"postgres://postgres:{db_password}@final-project-db.celqxz4aecqm.us-east-1.rds.amazonaws.com/games_db"
engine = create_engine(db_string)
combo_df = pd.read_sql_table(
    table_name="games",
    con=engine)
```

2. Database schema was designed and “games” table in postgres was created

```
# Exporting the table to postgres
db_string = f"postgres://postgres:{db_password}@final-project-db.celqxz4aecqm.us-east-1.rds.amazonaws.com/games_db"
engine =create_engine(db_string)
combo_df.to_sql(name="games", con=engine, if_exists="replace")
```

ERD


game_title_genre
game_title varchar
game_genre varchar
game_platform_ratings
game_title varchar
game_platform varchar
user_score float
user_positive float
user_neutral float
user_negative float
critics_metascore float
critics_positive float
critics_neutral float
critics_negative float
game_platform_release
game_title varchar
game_platform varchar
game_publisher varchar
game_developer varchar
maturity_rating varchar
player_number varchar
release_date varchar
release_year float
release_month float
is_handheld varchar
is_retro varchar
is_depricated varchar
game_platform_sales
game_title varchar
game_platform varchar
sales_NA float
sales_EU float
sales_JP float
sales_other float
sales_global float
game_platform_reviews
review_ID int
game_title varchar
game_platform varchar
critic_name varchar
critic_score float
critic_review_summary varchar

Description of Data Exploration Phase

1. Data was scraped from metacritic.com
    a. ETL was performed on the data and imported into Postgres using SQL Alchemy
2. Data was scraped from reviews from metacritic.com
    a. ETL was performed and imported into Postgres using SQL Alchemy
3. Data was cleaned and merged with game data from vgsales.csv.
    a. Data was exported to Postgres using SQL Alchemy
4. Feature engineering was performed
    a. Random Forest was used to interpolate missing values in the dataset
    b. Data was clustered using KMeans
5. A deep artificial neural network was created to predict Sales

Description of Analysis Phase

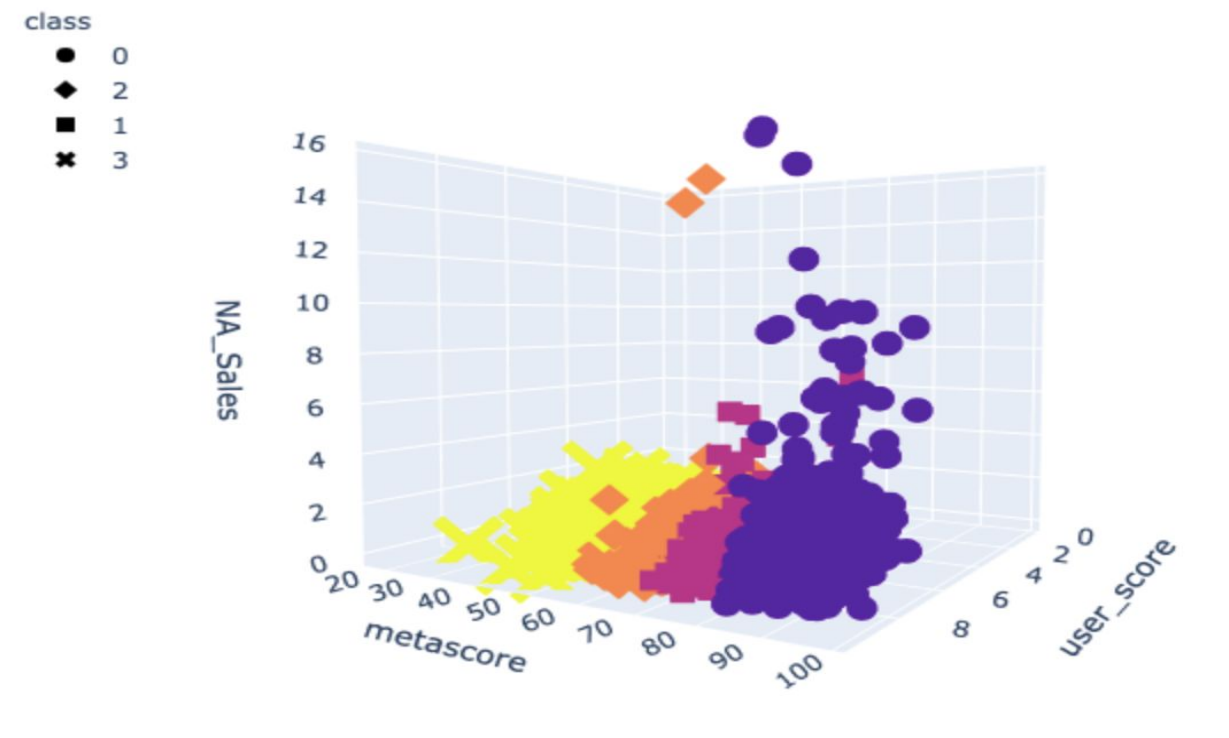
Data Visualization (Tableau)

- In order to analyze and understand trends in the data, we used Tableau which is a interactive data visualization software.
- Using Tableau we were able to create different visualizations for video game analysis.
- The visualizations that are being created are related to sales and reviews.
- The visualizations are primarily focused sales related to platform and metacritic scores on a regional and global scale.

Machine Learning (Neural Network)

- OOP (Object-Oriented Programming) was implemented in order to make easier to test different subsets of the data on the model to determine what works best without filling the notebook with repetitive blocks of code.
- A neural network was chosen to further analyze the data because they are adept at picking up subtle correlations between features and labels.
- After learning that the data we had was unfit to to predict sales, we chose to scale back and only predict sales for a certain region such is North America rather than globally which then came out with far better results.

Outcomes for Clustering Algorithm



References

1. Chikhani, Riad. “The History Of Gaming: An Evolving Community.” TechCrunch, TechCrunch, 31 Oct. 2015, techcrunch.com/2015/10/31/the-history-of-gaming-an-evolving-community/.
2. Tim Wijman. “2020 Global Games Market Report”. NewZoo. Accessed 05 December 2020
3. Smith, Gregory. “Video Game Sales.” *Kaggle*, 26 Oct. 2016, www.kaggle.com/gregorut/videogamesales/version/2?select=vgsales.csv.