



# AI Project Presentation

## Game Review Sentiment Analysis

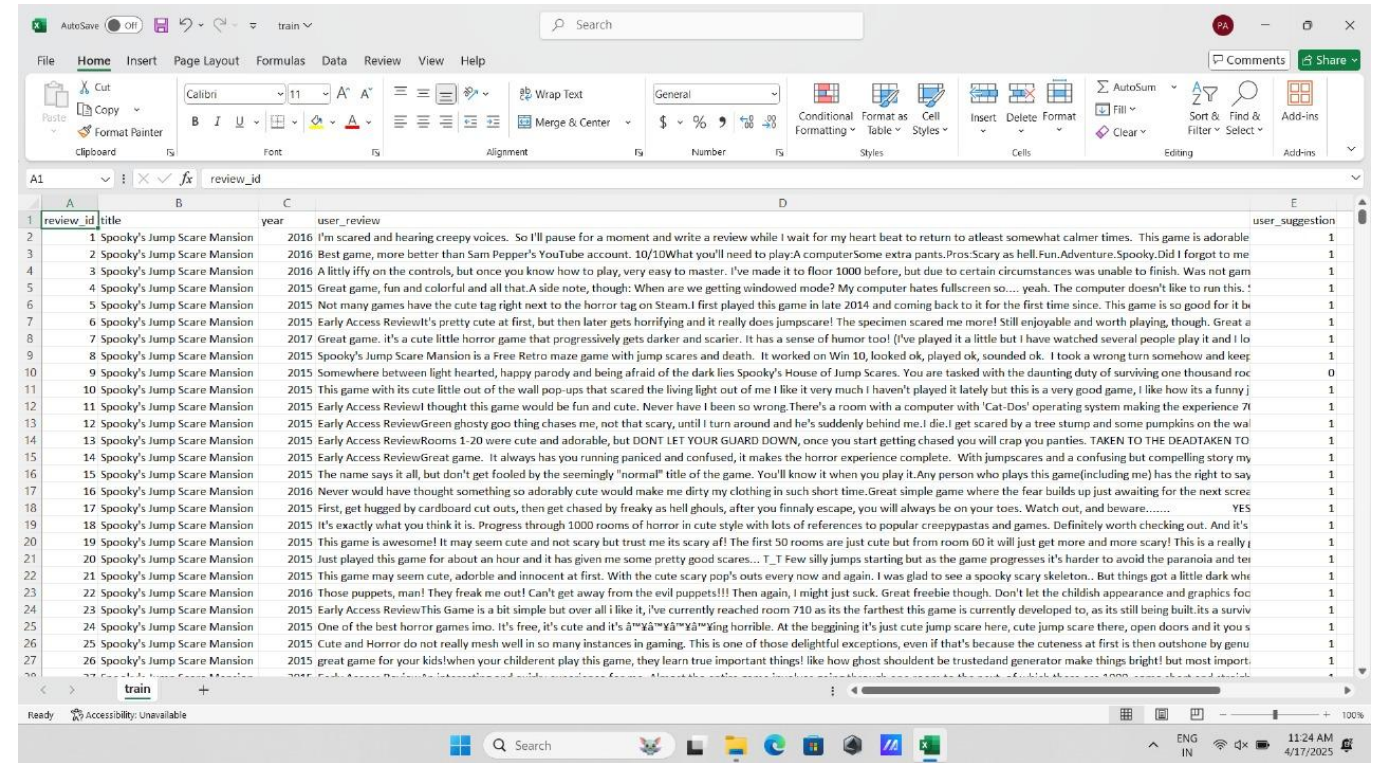
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Sem: 6th



- **Objective:** Classify game reviews to predict user recommendation (positive/negative sentiment)
- **Dataset:** Steam Game Review Dataset Kaggle
- **Models:** Naive Bayes and SVM classifiers
- **Tools:** Python, scikit-learn, NLTK, pandas



- **Name:** Steam Game Review Dataset (Kaggle)
- **Columns:** review\_id, title, year, user\_review, user\_suggestion
- **Size:** 18000+ rows, 5 columns (7.6 GB)
- Steam is a digital distribution platform and storefront developed by Valve Corporation, primarily used for buying, downloading, and playing PC games. It's a software client that allows users to purchase and manage licenses to games, offering features like online multiplayer, community hubs, and more.



review_id	title	year	user_review	user_suggestion
1	Spooky's Jump Scare Mansion	2016	I'm scared and hearing creepy voices. So I'll pause for a moment and write a review while I wait for my heart beat to return to atleast somewhat calmer times. This game is adorable	1
2	Spooky's Jump Scare Mansion	2016	Best game, more better than Sam Pepper's YouTube account. 10/10 What you'll need to play: A computer. Some extra pants. Pros: Scary as hell. Fun. Adventure. Spooky. Did I forget to me	1
3	Spooky's Jump Scare Mansion	2016	A little iffy on the controls, but once you know how to play, very easy to master. I've made it to floor 1000 before, but due to certain circumstances was unable to finish. Was not gam	1
4	Spooky's Jump Scare Mansion	2015	Great game, fun and colorful and all that. A side note, though: When are we getting windowed mode? My computer hates fullscreen so... yeah. The computer doesn't like to run this.!	1
5	Spooky's Jump Scare Mansion	2015	Not many games have the cute tag right next to the horror tag on Steam. I first played this game in late 2014 and coming back to it for the first time since. This game is so good for it b	1
6	Spooky's Jump Scare Mansion	2015	Early Access Review: It's pretty cute at first, but then later gets horrifying and it really does jumpscare! The specimen scared me more! Still enjoyable and worth playing, though. Great a	1
7	Spooky's Jump Scare Mansion	2017	Great game. It's a cute little horror game that progressively gets darker and scarier. It has a sense of humor too! (I've played it a little but I have watched several people play it and I lo	1
8	Spooky's Jump Scare Mansion	2015	Spooky's Jump Scare Mansion is a Free Retro maze game with jump scares and death. It worked on Win 10, looked ok, played ok, sounded ok. I took a wrong turn somehow and keep	1
9	Spooky's Jump Scare Mansion	2015	Somewhere between light hearted, happy parody and being afraid of the dark lies Spooky's House of Jump Scares. You are tasked with the daunting duty of surviving one thousand roc	0
10	Spooky's Jump Scare Mansion	2015	This game with its cute little out of the wall pop-ups that scared the living light out of me! I like it very much I haven't played it lately but this is a very good game, I like how its a funny j	1
11	Spooky's Jump Scare Mansion	2015	Early Access Review! thought this game would be fun and cute. Never have I been so wrong. There's a room with a computer with 'Cat-Dos' operating system making the experience 7i	1
12	Spooky's Jump Scare Mansion	2015	Early Access Review: Green ghosty goo thing chases me, not that scary, until I turn around and he's suddenly behind me. I die. I get scared by a tree stump and some pumpkins on the wal	1
13	Spooky's Jump Scare Mansion	2015	Early Access Review: Rooms 1-20 were cute and adorable, but DONT LET YOUR GUARD DOWN, once you start getting chased you will crap you panties. TAKEN TO THE DEAD TAKEN TO	1
14	Spooky's Jump Scare Mansion	2015	Early Access Review: Great game. It always has you running panicked and confused, it makes the horror experience complete. With jumpscare and a confusing but compelling story my	1
15	Spooky's Jump Scare Mansion	2015	The name says it all, but don't get fooled by the seemingly "normal" title of the game. You'll know it when you play it. Any person who plays this game (including me) has the right to say	1
16	Spooky's Jump Scare Mansion	2016	Never would have thought something so adorably cute would make me dirty my clothing in such short time. Great simple game where the fear builds up just awaiting for the next scree	1
17	Spooky's Jump Scare Mansion	2015	First, get hugged by cardboard cut outs, then get chased by freaky as hell ghouls, after you finally escape, you will always be on your toes. Watch out, and beware..... YES	1
18	Spooky's Jump Scare Mansion	2015	It's exactly what you think it is. Progress through 1000 rooms of horror in cute style with lots of references to popular creepypastas and games. Definitely worth checking out. And it's	1
19	Spooky's Jump Scare Mansion	2015	This game is awesome! It may seem cute and not scary but trust me its scary af! The first 50 rooms are just cute but from room 60 it will just get more and more scary! This is a really i	1
20	Spooky's Jump Scare Mansion	2015	Just played this game for about an hour and it has given me some pretty good scares... T_T Few silly jumps starting but as the game progresses it's harder to avoid the paranoia and ter	1
21	Spooky's Jump Scare Mansion	2015	This game may seem cute, adorable and innocent at first. With the cute scary pop ups every now and again. I was glad to see a spooky scary skeleton. But things got a little dark whe	1
22	Spooky's Jump Scare Mansion	2016	Those puppets, man! They freak me out! Can't get away from the evil puppets!!! Then again, I might just suck. Great freebie though. Don't let the childish appearance and graphics foc	1
23	Spooky's Jump Scare Mansion	2015	Early Access Review: This game is a bit simple but over all I like it, I've currently reached room 710 as its the farthest this game is currently developed to, as its still being built. Its a surviv	1
24	Spooky's Jump Scare Mansion	2015	One of the best horror games imo. It's free, it's cute and it's a little scary. At the beginning it's just cute jump scare here, open doors and if you s	1
25	Spooky's Jump Scare Mansion	2015	Cute and Horror do not really mesh well in so many instances in gaming. This is one of those delightful exceptions, even if that's because the cuteness at first is then outshone by genu	1
26	Spooky's Jump Scare Mansion	2015	great game for your kids when your children play this game, they learn true important things! like how ghost shouldnt be trusted and generator make things bright! but most import	1
27	Spooky's Jump Scare Mansion	2015	Early Access Review: A fun and interesting and mildly scary game. Almost the entire game is just a series of jumpscare and a few puzzles. I think there are 1000+ rooms and a few puzzles	1



# Data Preprocessing

- Text cleaning (lowercase, special character removal)
- Tokenization using NLTK
- Custom stopwords removal (preserving sentiment-critical words)
- Word stemming with Porter Stemmer

```
def preprocess_text(text):  
    text = str(text).lower()  
    text = re.sub(r'^a-zA-Z\s]', '', text)  
    tokens = word_tokenize(text)  
  
    # Preserve important sentiment words  
    stop_words = set(stopwords.words('english'))  
    important_words = {'no', 'not', "don't", "doesn't", "didn't", ...}  
    custom_stopwords = stop_words - important_words  
  
    tokens = [token for token in tokens if token not in custom_stopwords]  
    stemmer = PorterStemmer()  
    tokens = [stemmer.stem(token) for token in tokens]  
    return ' '.join(tokens)
```



- **TF-IDF Vectorization**
  - Max 5000 features
  - Unigrams and bigrams (1–2-word phrases)
  - Minimum document frequency: 2

```
tfidf_vectorizer = TfidfVectorizer(  
    max_features=5000,  
    ngram_range=(1,2),  
    min_df=2  
)
```

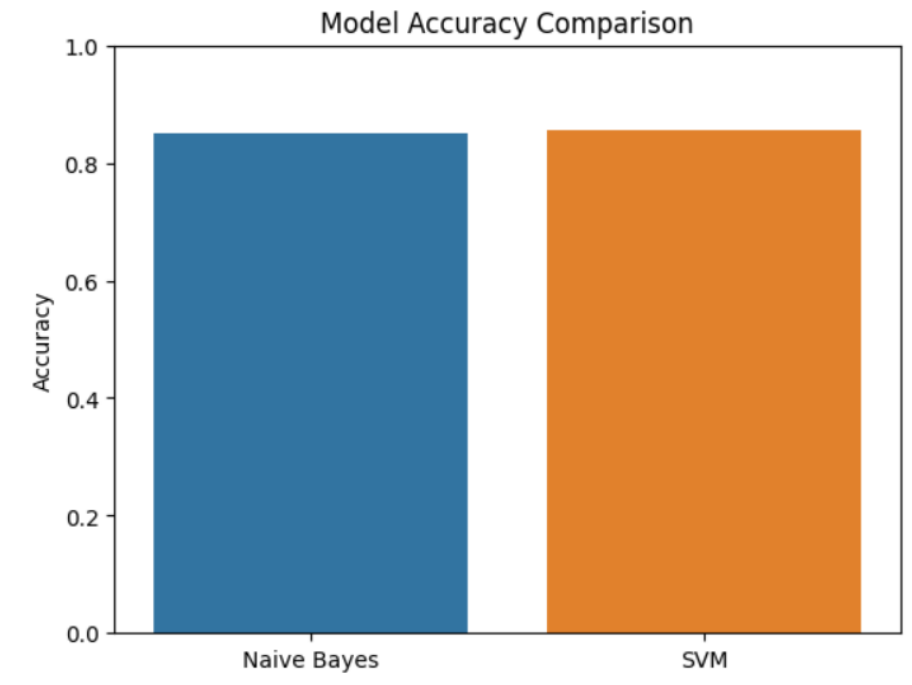




[illegible]

- SVM slightly outperforms Naive Bayes
- Both models show good balance between precision and recall

Model	Accuracy	Precision	Recall	F1-Score
Naïve Bayes	85%	0.85	0.84	0.84
SVM	86%	0.85	0.85	0.85



- **Sentiment-preserving preprocessing** is crucial
  - Keeping negation words improves accuracy
  - Custom stop word handling preserves review context
- **Bigrams capture important phrases** like "early access"
- **Linear SVM provides the best performance** for this task





Review: I absolutely loved playing this game, it is very good!  
Predicted Sentiment: Positive

Review: The graphics were terrible and the story made no sense.  
Predicted Sentiment: Negative

Review: A fun and addictive game, totally worth the time.  
Predicted Sentiment: Positive

Review: It crashes every time I open it. Worst experience ever.  
Predicted Sentiment: Negative

Review: One of the best games I've played in a long time!  
Predicted Sentiment: Positive

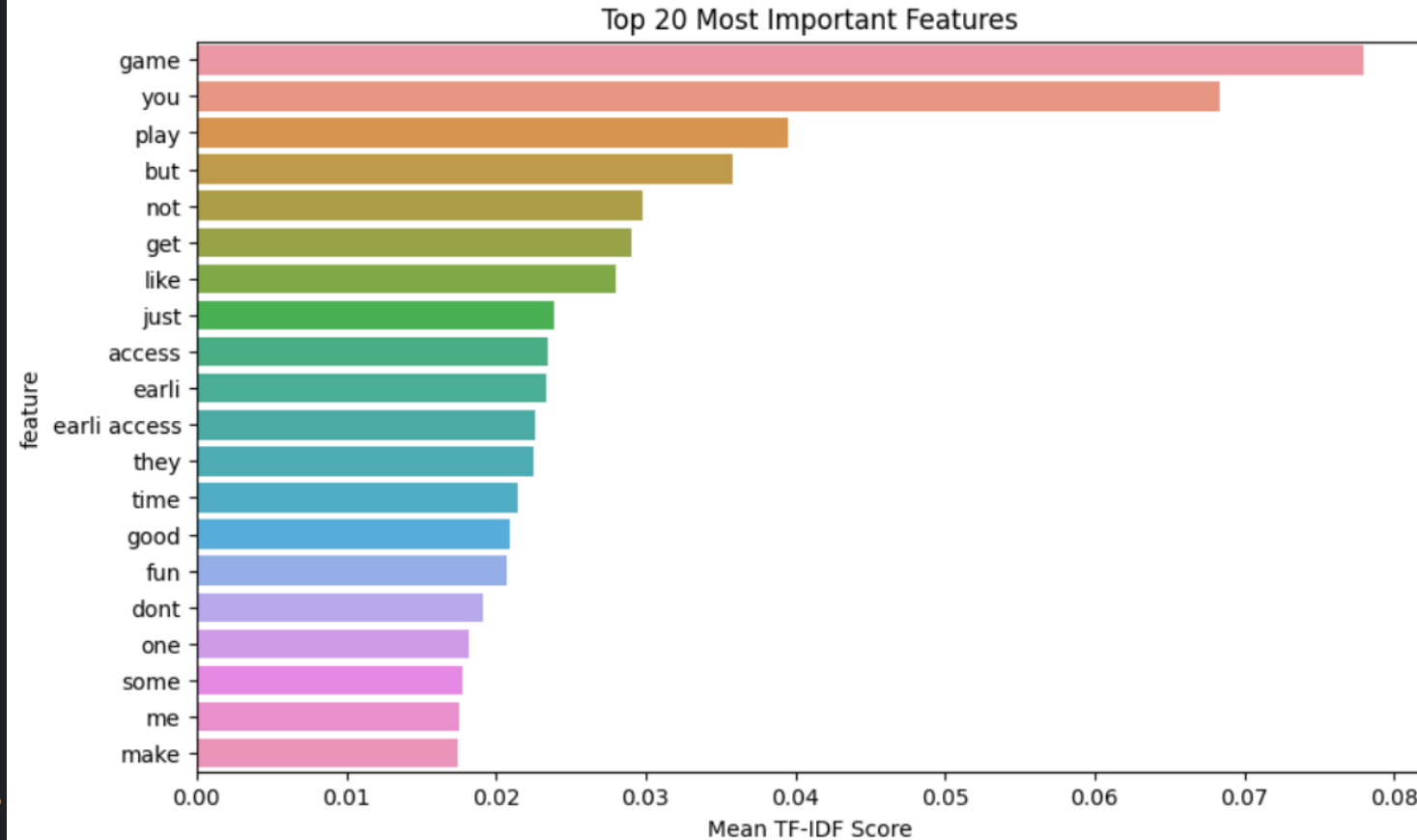
Review: The game is okay but gets boring quickly.  
Predicted Sentiment: Positive

Review: Very innovative gameplay and smooth performance.  
Predicted Sentiment: Positive

Review: Too many bugs to even play. Avoid at all costs.  
Predicted Sentiment: Negative

Review: The soundtrack is beautiful and the missions are exciting.  
Predicted Sentiment: Positive

Review: Not impressed. Feels like an unfinished product.  
Predicted Sentiment: Negative



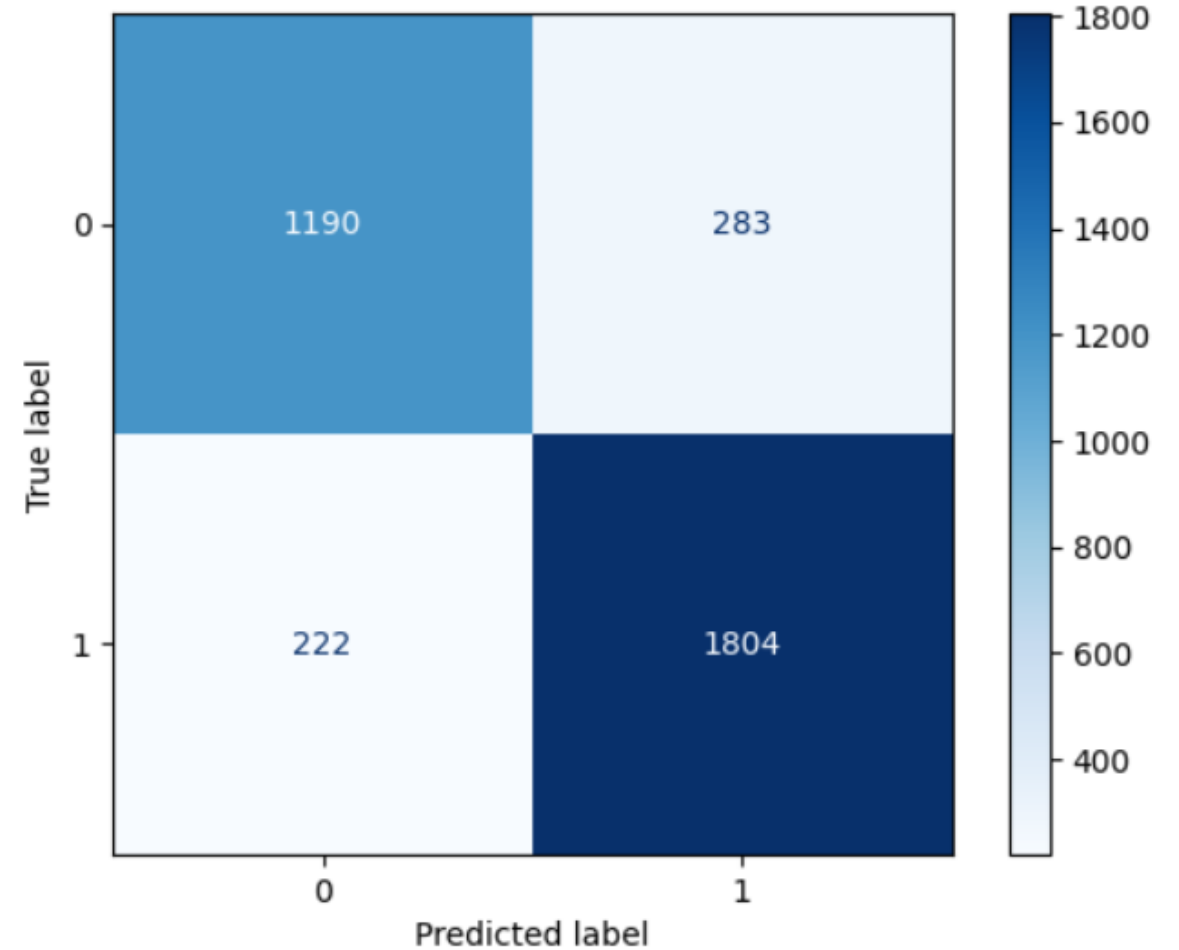
## Naive Bayes Results:

	precision	recall	f1-score	support
0	0.85	0.78	0.81	1473
1	0.85	0.90	0.87	2026
accuracy			0.85	3499
macro avg	0.85	0.84	0.84	3499
weighted avg	0.85	0.85	0.85	3499

## SVM Results:

	precision	recall	f1-score	support
0	0.84	0.81	0.82	1473
1	0.86	0.89	0.88	2026
accuracy			0.86	3499
macro avg	0.85	0.85	0.85	3499
weighted avg	0.86	0.86	0.86	3499

Confusion Matrix



- **Game developers:** Automatically sort feedback by sentiment
- **Distribution platforms:** Highlight top positive/negative points
- **Players:** Quick assessment of game reception
- **Market research:** Track sentiment trends over time



- **Successfully implemented** a game review sentiment analysis system with **86% accuracy**.
- **Key achievements:**
  - Effective preprocessing pipeline preserving sentiment indicators
  - Feature engineering capturing important context through n-grams
  - Robust classification performance on unseen reviews
- **Project demonstrates** how NLP techniques can extract valuable insights from user-generated content
- **Business impact:**
  - Helps game developers prioritize feedback
  - Enables data-driven decisions for game improvements
  - Provides automated analysis of large review volumes
- **This framework can be extended** to other digital products and customer feedback systems

