

AI-assisted sentiment analysis

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Harvesting sentiments from player reviews

Goals

- Exploring the tools and the methods
- Documenting the process
- Designing a viable user research tool



Basic workflow

Prompt Engineering

Iterate the prompt with `Ollama` - a local LLM server, your chosen language model for the task - `Gemma 2` in this project, and `Docker` contained `Open WebUI`.

Second Pass Analysis

Create an overall sentiment analysis over the local sentiment database in Python with Ollama and LLM. Simplify further and unify synonyms.



Data Engineering

Choose a game and request `Steam API` for the 20 most helpful reviews to analyze.

Sentiment Analysis


Go through the list of games in `Python` with an Ollama-hosted language model and save the sentiment analysis in a local database.

Data Visualization

Visualize data to tell your story.

For game designers and researchers

Using Steam API to get the most helpful reviews




```
def get_reviews(appid):  
    url = f"https://store.steampowered.com/appreviews/{appid}?json=1"  
    response = requests.get(url)  
    return response.json()
```

Quantic Player Type data template for LLM to fill during semantic analysis


```
template = {  
  'Community': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Competition': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Excitement': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Destruction': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Completion': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Power': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Strategy': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Challenge': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Fantasy': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Story': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Discovery': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Design': {'positive': [], 'negative': [], 'sentiment': 0},  
  'Quantic Gamer Type': [],  
  'Overall Sentiment': 0  
}
```

LLM prompt after many iterations



```
prompt_base = f'''Do a sentiment analysis for a Steam game review based on Quantic Foundry's 12 player motivations and 9 player types. Categorize, simplify and generalize elements to match in categories. Give a numeric value from -5 to 5 to an overall sentiment. Analyze in which Quantic Gamer Type reviewer belongs. Find positive and negative elements, and keep them max five words long. Output only code as a json object, do not include any additional explanation. An example data: {template} Review to analyze: {review_text}'''
```

Initializing and invoking LLM with the Ollama server



```
llm = Ollama(model="gemma2:latest")  
prompt_text = f"""{prompt_base} {review_text}""  
prompt = llm.invoke(prompt_text)
```


Categories from Quantic Foundry's Gamer Motivation Model

```
"[Review ID]": {  
  "Excitement": {  
    "positive": [  
      "fantastic",  
      "potential"  
    ],  
    "negative": [],  
    "sentiment": 2  
  },  
  "Completion": {  
    "positive": [],  
    "negative": [  
      "bugs",  
      "needs time"  
    ],  
    "sentiment": -1  
  },  
  "Strategy": {  
    "positive": [  
      "economy feels better"  
    ],  
    "negative": [  
      "population growth",  
      "slower simulation"  
    ],  
    "sentiment": -1  
  },  
}
```

```
"Challenge": {  
  "positive": [  
    "can be fixed"  
  ],  
  "negative": [],  
  "sentiment": 1  
},  
"Design": {  
  "positive": [  
    "great at first",  
    "upgrades fantastic"  
  ],  
  "negative": [],  
  "sentiment": 2  
},  
"Quantic Gamer Type": [  
  "Completionist",  
  "Challenger"  
],  
"Overall Sentiment": 0  
},
```

Cities: Skylines II

"unfortunately I can not recommend this game. its **great at first**, all the upgrades from skylines 1 are **fantastic**. its plays well until it doesn't. **population growth** is rewarded with **slower simulation** speeds. this game has a ton of **potential** if this **can be fixed**. 7800x3d, 4070,"

economy feels better **upgrades fantastic**

bugs **needs time**

Gamer Type: Completionist, Challenger

Overall Sentiment: 0 (-5 to 5)

For game developers and analysts

Prompt engineering with Gemma 2 in Open WebUI

Going through prompt iteration #54

Do a sentiment analysis for a Steam game review. Categorize, simplify and generalize elements. Give a numeric value to from -5 to 5 to an overall sentiment. Find positive and negative elements, and keep elements max three words long. Output only code as a json object, do not include any additional explanation.


An example data:

```
{
  "Gameplay": {"positive": [], "negative": [], "sentiment": },
  "Mechanics": {"positive": [], "negative": [], "sentiment": },
  "Graphics": {"positive": [], "negative": [], "sentiment": },
  "Audio": {"positive": [], "negative": [], "sentiment": },
  "Story": {"positive": [], "negative": [], "sentiment": },
  "Performance": {"positive": [], "negative": [], "sentiment": },
  "Accessibility": {"positive": [], "negative": [], "sentiment": },
  "Value for Money": {"positive": [], "negative": [], "sentiment": },
  "Overall Sentiment":
}
```

Review to analyze:

"so after over 400 hours, and 50 hours since last update, i'm furious with this game. i've never seen so many different unrelated glitches in one game. i never leave reviews, but i had to get this off my chest. the longer you play on the same map, the more glitches appear, which is so frustrating. i spend hours and hours working on one single city, and by the time i get to a population of 100k, the entire city is so broken it becomes unplayable. things that were working fine when i started a map, start breaking, the land itself starts glitching, a wall of dirt will appear around your city, the buildings wont level up. the ocean level will magically jump 10 feet, flooding anything close to the water. when i say its a broken game i mean its broken."

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 gemma2:latest

json

Copy Code

```
{
  "Gameplay": {"positive": [], "negative": ["broken", "unrelated glitches"], "sentiment": -4},
  "Mechanics": {"positive": [], "negative": ["glitching", "broken", "dont level"], "sentiment": -5},
  "Graphics": {"positive": [], "negative": ["wall of dirt", "ocean level jump"], "sentiment": -3},
  "Audio": {"positive": [], "negative": [], "sentiment": 0},
  "Story": {"positive": [], "negative": [], "sentiment": 0},
  "Performance": {"positive": [], "negative": ["broken", "unplayable"], "sentiment": -4},
  "Accessibility": {"positive": [], "negative": [], "sentiment": 0},
  "Value for Money": {"positive": [], "negative": ["broken game"], "sentiment": -5},
  "Overall Sentiment": -4
}
```

Categories via domain knowledge

```
"[Review ID]": {  
  "Gameplay": {  
    "positive": [  
      "fun game"  
    ],  
    "negative": [  
      "game breaking bugs",  
      "odd design",  
      "sterile",  
      "overly clean"  
    ],  
    "sentiment": -1  
  },  
  "Mechanics": {  
    "positive": [  
      "feels better",  
      "good economy"  
    ],  
    "negative": [],  
    "sentiment": 1  
  },  
}
```

```
  "Graphics": {  
    "positive": [  
      "good looking"  
    ],  
    "negative": [],  
    "sentiment": 1  
  },  
  "Performance": {  
    "positive": [],  
    "negative": [  
      "high end",  
      "misread audience"  
    ],  
    "sentiment": -2  
  },  
  "Overall Sentiment": -1
```

Cities: Skylines II

"Colossal Order please re watch your own promotion video from 5 years ago by Justin Roczniak/donoteat01 and listen to what he says. That's what a good city simulation needs to be able to do, on top of being a **good looking** city painter. Its a start but still has some **odd design**. I think the worst part is somehow its more **sterile** and **overly clean** felling than the first game. Shame on Paradox for pushing this out the door long before it was ready. Making hardware requirements this **high end** was a fundamental **misread** of your **audience**. City builders are traditionally played on mid range systems and laptops and by people who often don't prioritize cutting edge first person shooter/ action game graphics."

Gameplay:

fun game
game breaking bugs
odd design
sterile
overly clean

Sentiment: -1

Mechanics:

feels better
good economy

Sentiment: 1

Graphics:

good looking

Sentiment: 1

Performance:

high end
misread audience

Sentiment: -2

Overall:

Sentiment: -1

Cities: Skylines II - Overall Sentiments

	Category	Positive	Negative	Recurring positive and negative themes	
1	Gameplay (0.67)	20	19	<ul style="list-style-type: none"> + Fun game + Mixed-zoning + Road-building 	<ul style="list-style-type: none"> - Game breaking bugs - Sterile design - Boring
2	Mechanics (-0.07)	18	13	<ul style="list-style-type: none"> + Economy + Zone mixing + New mechanics 	<ul style="list-style-type: none"> - Bugs - Crashes - Lacks polish
3	Graphics (-0.2)	2	11	<ul style="list-style-type: none"> + Good looking + Realistic art 	<ul style="list-style-type: none"> - Lacks polish - Glitches - Dull colors
4	Value for money (-1.15)	0	7		<ul style="list-style-type: none"> - Don't buy - Lack of content - Wait until 2026
5	Performance (-2.0)	0	23		<ul style="list-style-type: none"> - Bugs - Glitches - Crashes

Results

Results may vary



Remarks

Future development

- Refactor code before open-sourcing
- Create and fine-tune premade prompts for different use cases
- Incorporate seamlessly analytical and visualizing tools
- Combine everything as a Docker container for better usability and compatibility
- Add to portfolio

Thank you!

● ~~Questions?~~

End of transmission. □