

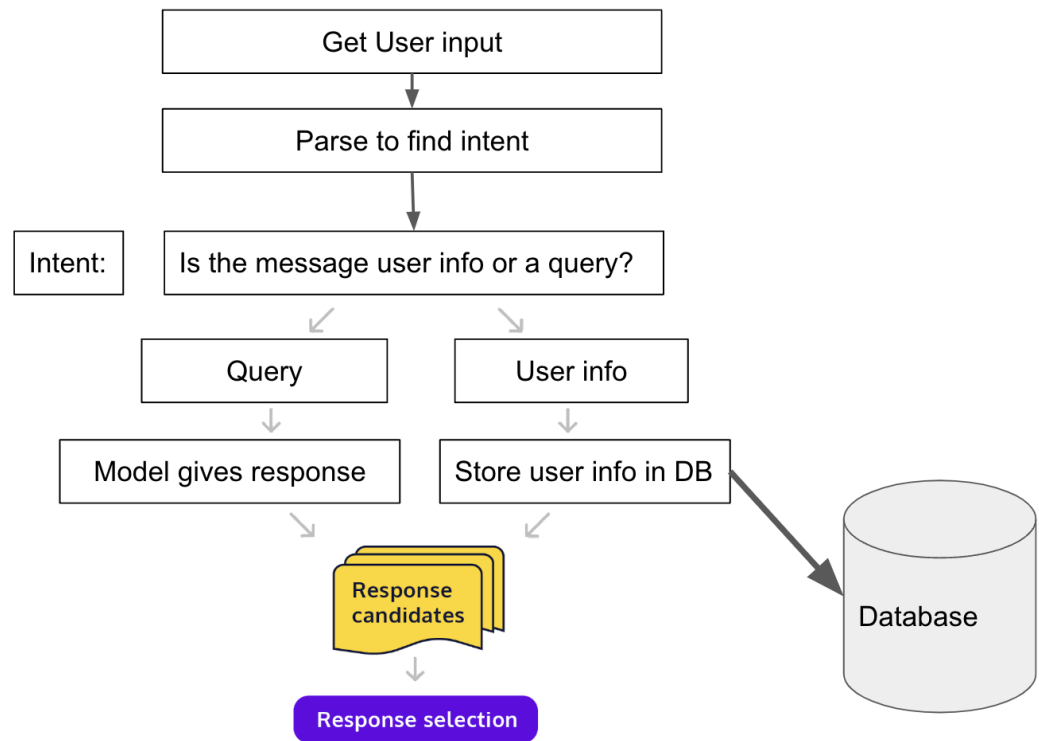
# ChatBot Report

Richard Padilla | NLP EMSE Spring '23 | Dr. Mazidi

## System Description:

The ChatBot I have created is written in python. It is a retrieval-based chatbot that utilizes the knowledge base I created in the web crawler project.

## Diagram of Dialog Tree and Logic:



## Sample Dialog Interactions:

```
%: what is a gameboy game?
tag is:game
THE TAG WAS IN INTENTS
["[ [ gbdev.io [ ] [ ] games [ ] [ ] pan docs [ ] community community [ [ ] chat [ ] [ ] contribute [ ] [ ] gb compet
[ endif ] analytics by wp statistics v13.2.16 - https : //wp-statistics.com/ skip to content refresh games gameboy game d
%: tell me about the gameboy
tag is:gameboy
THE TAG WAS IN INTENTS
['creating photo realistic images with neural networks and a gameboy camera the game boy printer - an in-depth technica
.comments-area post navigation previous previous post : a sudden jolt , of gameboy goodness !
%: [ ]

%: what about assembly?
tag is:assembly
THE TAG WAS IN INTENTS
['# game boy color bootstrap rom unused palettes colorization palettes in the bios rom disassembly # hardware dmg sch
z80 assembly support for visual studio code rgbds-vscode - visual studio code language extension for rgbds gbz80 assemb
%: [ ]
```

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```
%: what about assembly?
tag is:assembly
THE TAG WAS IN INTENTS
['# game boy color bootstrap rom  unused palettes  colorization palettes in the bios  rom disassembly  #
z80 assembly support for visual studio code  rgbds-vscode  - visual studio code language extension for
%: 
```

```
cb = chatBot(kb)
cb.chat()

... Welcome to GB ChatBot!
When you are done using GB ChatBot, please type exit() to end the program.
Please type something you'd like to know about gameboy development:
%: help me with development
tag is:development
THE TAG WAS IN INTENTS
['[ [ gbdev.io [ ] [ [ ] games [ ] [ ] pan docs [ ] community community [ [ ] chat [ ] [ ] contribute [ ] [ ] gb compet
flappyboy : making a simple game boy game  super game boy development  - step by step tutorial to implement super game bo
%: 
```

```
%: exit()
Thanks for using GB ChatBot. Have a Nice Day!
```

## Appendix for the Knowledge Base:

Knowledge Base:

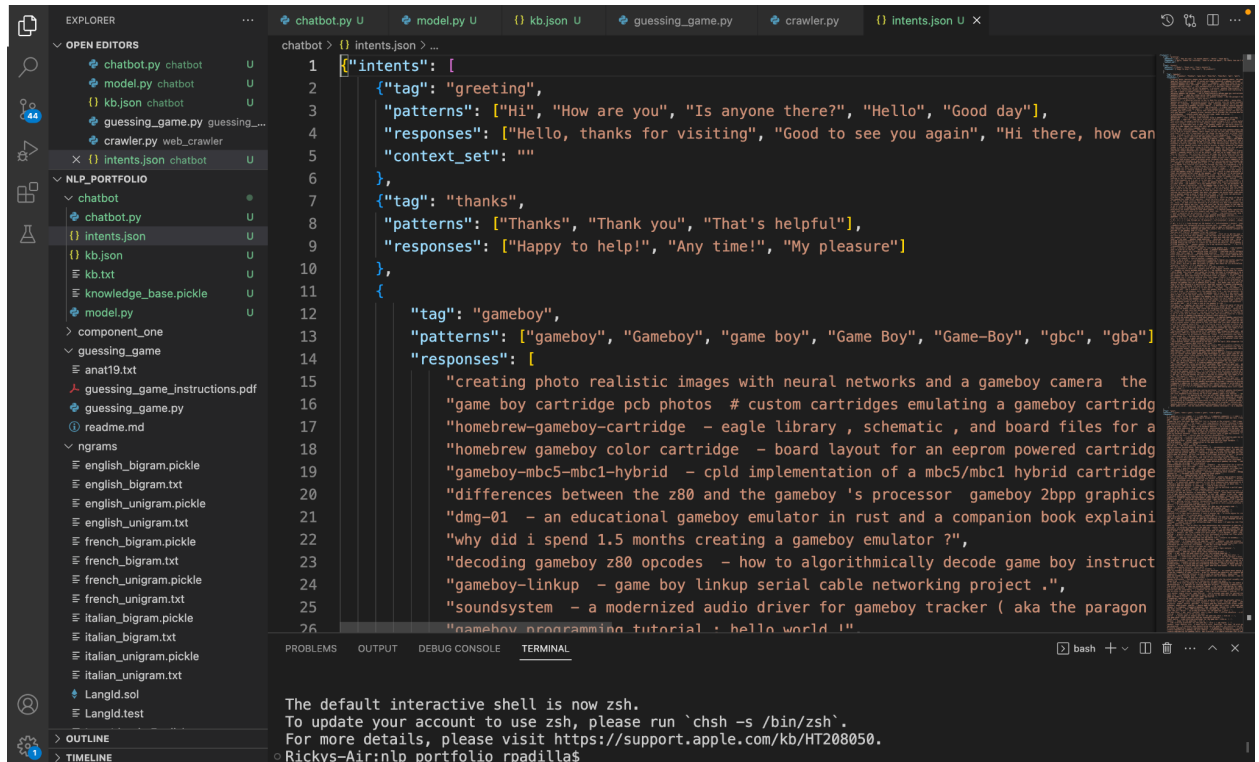
The screenshot shows a VS Code editor with the following details:

- EXPLORER:** A file tree on the left showing the project structure. The file `kb.json` is selected and highlighted in blue.
- EDITOR:** The main window displays the content of `kb.json`. It is a JSON object with a key `"gameboy"` whose value is a list of 26 strings. These strings are various Game Boy-related topics, such as "creating photo realistic images with neural networks and a gameboy camera", "game boy cartridge pcb photos", "homebrew-gameboy-cartridge", "gameboy-mbc5-mbc1-hybrid", "differences between the z80 and the gameboy 's processor", "dmg-01", "why did i spend 1.5 months creating a gameboy emulator?", "decoding gameboy z80 opcodes", "gameboy-linkup", "soundssystem", "gameboy programming tutorial", "deadscroll", "gameboy boilerplate", "dangan", "reverse engineering a gameboy rom with radare2", "reverse engineering the gameboy tetris dma hijacking", "to retrieve images from the camera", "esp8266 game boy printer", "wifi gbp emulator", "arduino gameboy printer emulator", "gameboy-brainfuck", "gbcamcorder", and "ohcartread".
- TERMINAL:** At the bottom, a terminal window shows the default interactive shell is now `zsh`. It also provides instructions to update the account to use `zsh` by running `chsh -s /bin/zsh` and provides a link to Apple's support page for more details.

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Converted to Intents.json:



```
1 [{"intents": [
2   {
3     "tag": "greeting",
4     "patterns": ["Hi", "How are you", "Is anyone there?", "Hello", "Good day"],
5     "responses": ["Hello, thanks for visiting", "Good to see you again", "Hi there, how can",
6     "context_set": ""
7   },
8   {
9     "tag": "thanks",
10    "patterns": ["Thanks", "Thank you", "That's helpful"],
11    "responses": ["Happy to help!", "Any time!", "My pleasure"]
12  },
13  {
14    "tag": "gameboy",
15    "patterns": ["gameboy", "Gameboy", "game boy", "Game Boy", "Game-Boy", "gbc", "gba"]
16    "responses": [
17      "creating photo realistic images with neural networks and a gameboy camera the",
18      "game boy cartridge pcb photos # custom cartridges emulating a gameboy cartridg",
19      "homebrew-gameboy-cartridge - eagle library , schematic , and board files for a",
20      "homebrew gameboy color cartridge - board layout for an eeprom powered cartridg",
21      "gameboy-mbc5-mbc1-hybrid - cpld implementation of a mbc5/mbc1 hybrid cartridge",
22      "differences between the z80 and the gameboy 's processor gameboy 2bpp graphics",
23      "dmg-01 - an educational gameboy emulator in rust and a companion book explaini",
24      "why did i spend 1.5 months creating a gameboy emulator ?",
25      "decoding gameboy z80 opcodes - how to algorithmically decode game boy instruct",
26      "gameboy-linkup - game boy linkup serial cable networking project .",
27      "soundsystem - a modernized audio driver for gameboy tracker ( aka the paragon",
28      "gameboy programming tutorial : hello world !"
```

Appendix for the knowledge base is:

```
return ["gameboy", "game", "score", "gbdk", "development",
"nes", "software", "programming", "assembly", "tutorials"]
```

Gameboy:"gameboy programming tutorial : hello world !"

Game: "the game never found a publisher and was eventually canceled ."

Score: "but with the gameboy being 8 bit , i ' m storing my scores as arrays as scores up to 255 would be rather boring... ."  
."

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Gbdk: "next next post : gameboy gbdk tutorial rom code !"

Development: "gbforth - a forth-based game boy development kit ."

Nes: "wiz - a high-level assembly language for writing homebrew on retro console platforms ( game boy , nes , atari 2600 , and more ) ."

Software: "gingerbread - a software library for making your own game boy games .",

Programming: "links a course in gameboy programming at wichita state university ."

Assembly: "gbasm - a javascript based compiler for game boy z80 assembly code ."

Tutorials: "dmgreport - game programming tutorials in assembly ."

Loading the intents file into the chatbot:

```
[1] from google.colab import drive
    drive.mount('/content/drive')

Drive already mounted at /content/drive; to attempt to forcibly remou

import json
with open('/content/drive/MyDrive/intents.json', 'r') as file:
    kb = json.load(file)
```

Appendix for the User Model:

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```
conn = sqlite3.connect('chatbot_users.db')

# create a table to store user information
conn.execute('''
    CREATE TABLE IF NOT EXISTS users (
        id INTEGER PRIMARY KEY AUTOINCREMENT,
        name TEXT NOT NULL,
        age INTEGER,
        gender TEXT,
        location TEXT
    )
''')

conn.execute('''
    CREATE TABLE IF NOT EXISTS likes (
        id INTEGER PRIMARY KEY AUTOINCREMENT,
        userid INTEGER,
        interest TEXT NOT NULL,
        FOREIGN KEY(userid) REFERENCES users(id)
    )
''')

conn.execute('''
    CREATE TABLE IF NOT EXISTS dislikes (
        id INTEGER PRIMARY KEY AUTOINCREMENT,
        userid INTEGER,
        uninterest TEXT NOT NULL,
        FOREIGN KEY(userid) REFERENCES users(id)
    )
''')
```

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Screenshot of the sqlite file (not very readable):

[illegible]

Screenshot of sample output in tables for chatbot users:

```
[273] conn = sqlite3.connect('chatbot_users.db')
      cursor = conn.execute("SELECT * FROM users")
      items = cursor.fetchall()
      print(items)
      conn.close()

[(1, 'Bob', None, None, None), (2, 'Mary', 44, None, 'Texas'), (3, 'Louis', 34, 'man', 'Utah')]
```

```
conn = sqlite3.connect('chatbot_users.db')
cursor = conn.execute("SELECT * FROM likes")
items = cursor.fetchall()
print(items)
conn.close()

[(1, 1, 'coffee'), (2, 3, 'computers'), (3, 3, 'flying')]
```

```
conn = sqlite3.connect('chatbot_users.db')
cursor = conn.execute("SELECT * FROM dislikes")
items = cursor.fetchall()
print(items)
conn.close()

[(1, 3, 'swimming'), (2, 3, 'dislikes')]
```

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## Evaluation of the ChatBot:

Strengths: The chatbot is responsive and answers in real time. The chatbot is knowledgeable about gameboy development specifically. The chatbot is simple in design and easy to understand how to use.

Weaknesses: The chatbot does not interpret what the user is asking further than the general intent. The responses of the chatbot are not generative. The chatbot is not a general chat-bot, since it is only trained on gameboy game development.

## Citations:

*Python AI chat bot tutorial - part 1*. techwithtim.net. (2019, May 29). Retrieved March 26, 2023, from <https://www.techwithtim.net/tutorials/ai-chatbot/part-1/>