



THE PSYCHOLOGIST DOG

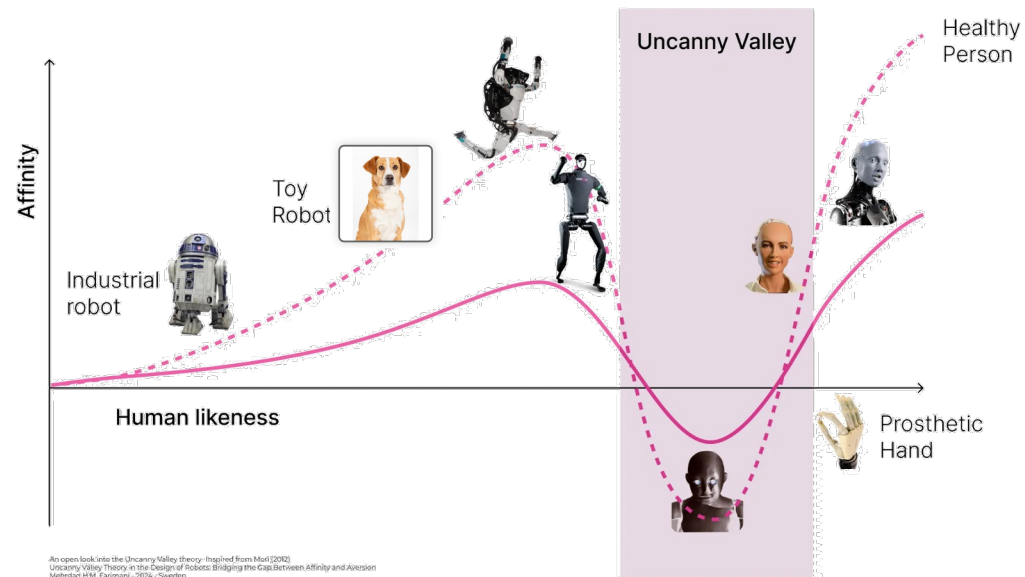
LT2319 Dialogue Systems 2 | Leali Marco

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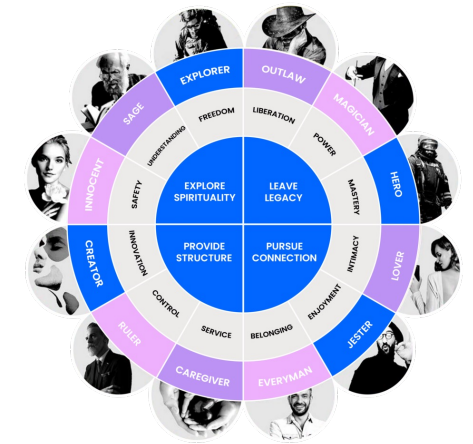
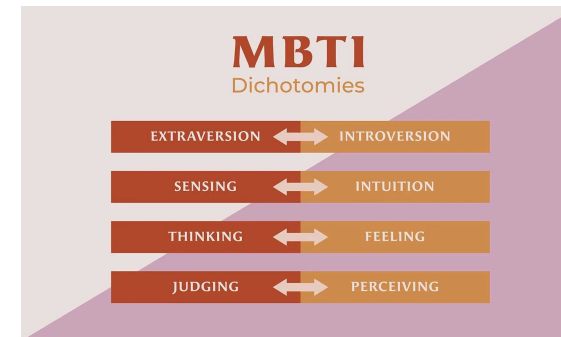
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1. Introduction

The **psychologist dog** is a friendly **personality analysis chatbot** that engages users in psychological questioning to determine their personality archetype and provides personalized recommendations based on the detected archetype.



Myers-Briggs Type Indicator and 12 Jungian Archetypes



RECOMMENDATIONS 📚🎬🧑
PSYCHOLOGICAL INVESTIGATION 🧠
CHITTY-CHAT 💬

2. System architecture and APIs

Node.js with TypeScript + API: Ollama LLM + Azure Speech Services

Ollama LLM API: Local language model processing for conversational responses and analysis | llama3.1 model

Azure Speech Services: Speech-to-text and text-to-speech capabilities

Custom Psychology Engine: Local archetype detection algorithms using rule-based pattern matching

Key Service Components

8 predefined psychology questions for personality assessment

12 personality archetypes with detailed trait mappings

Personalized recommendation engine for books, movies, music and activities



AZURE SPEECH

3. Challenges



- Common **question-answer patterns** in psychology questioning
- How to **assign** the archetype/MTBI personality
- How users naturally describe their **preferences**
- **Archetype revelation** preferences (direct vs. gradual)
- **Recommendation** request patterns
- Handling of **misunderstandings** or vague answers

4. Implementation

```
// 📊 FUNCTIONS
archetypeToMBTI
detectArchetypeFromStatement
getArchetypeRecommendations
sValidAnswer
fetchLLM
isRecommendationRequest
isPersonalInfoWithArchetypeQuestion
isPersonalInfoShared
isArchetypeListRequest
extractCategory
```

```
// 🥊 ACTIONS
sst_prepare
sst_listen
appendUserMessage
appendAssistantMessage
speakLastMessage
incrementNoInputCounter
resetNoInputCounter
recordPsychAnswer
cleanLLMResponse
restartConversation
sayGoodbye
provideArchetypeList
provideRecommendations
continuePersonalityExploration
provideLLMRecommendations
provideArchetypeSpecificRecommendations
```

```
// 🎭 ACTORS
chatCompletion
analyzeMBTI
generateGeneralRecommendations
analyzeGeneralFromStatement
```


4. Implementation

// 🧠 DM MACHINE states

Prepare

Idle

Loop

Speaking

Ask

on RECOGNISED:



PRIORITY 1: Exit command



PRIORITY 2: Restart commands



PRIORITY 3: Recommendation requests



PRIORITY 4: Personal info with archetype questions (ONLY when answerCount = 0)



PRIORITY 5: Personal info shared (MOST IMPORTANT FOR "I like music") - ONLY when answerCount = 0



PRIORITY 6: Archetype list requests



PRIORITY 7: Handle requests for archetype-specific recommendations



PRIORITY 8: Normal input LAST (fallback) - This now captures "I love/I like" after first interaction

ConfirmQuit

SpeakingConfirmQuit

ConfirmQuitListen

ConfirmRestart

ConfirmRestartListen NOT WORKING NOW

GenerateRecommendations

AnalyzeFromStatement

HandleArchetypeChoice

ChatCompletion

AnalyzePersonality

SpeakingAnalysis

ListeningAnalysis

ArchetypeConversation

Priority-based input handling: 7 levels of intent recognition

Context-aware responses: Maintains conversation history and user profile

Flexible questioning: Adaptive question selection based on user engagement

Multi-path analysis: Both quick statement analysis and extended questioning flows

4. Implementation



Idle state

🐶 “hi, tell me what you love and I will guess who you are. Or I will make you questions.”



💡 “Tell me some recommendations about {category}.”



💡 “I love playing [...].”



💡 “Make me questions.”



💡 “I want to quit/restart.”

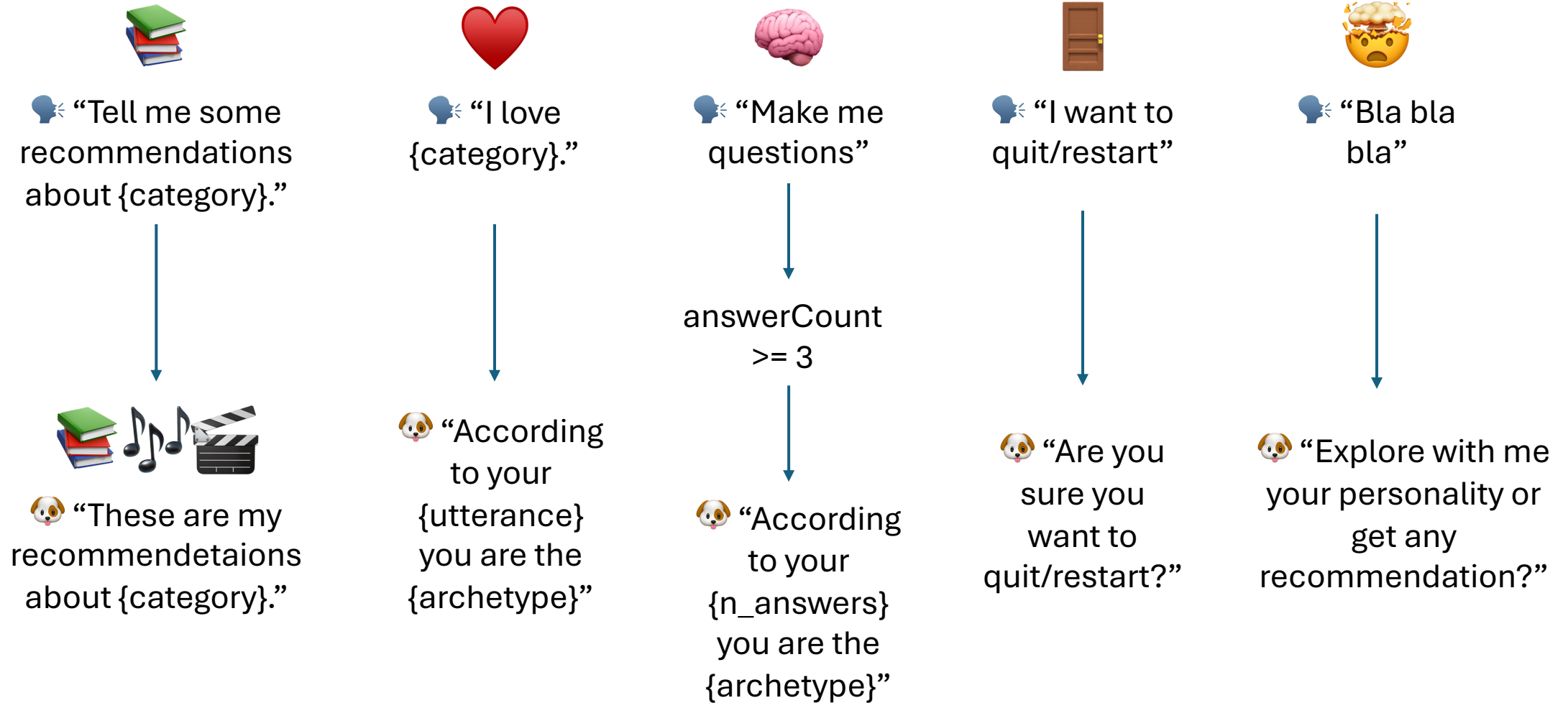


💡 “(no input)”



💡 “Bla bla bla.”

5. Sample dialogues handled by the system



5. Sample dialogues handled by the system

❤️ Dialogue A: Efficient Archetype Detection

🐶: Hi, tell me what you love and I will guess who you are. Or I will make you questions.

👤: I enjoy organizing team projects and making decisions


🐶: Based on you saying "I enjoy organizing team projects and making decisions", I detect you might be the "The Ruler" archetype! Key traits: organized, leadership. Would you like recommendations or to continue exploring?


5. Sample dialogues handled by the system


Dialogue B: Psychology Question Flow

: Hi, tell me what you love and I will guess who you are. Or I will make you questions.


: I really like New York City

: The energy of the city seems to draw you in. Do you feel most alive when surrounded by other people or is it more of a solo experience for you?

: I really love soul experiences.

: You're someone who values depth and authenticity in your relationships and experiences. You likely prioritize meaningful connections over superficial ones. How do you handle being around people who don't share the same level of emotional openness as you?

: I really like, uh, mini meaningful, umm, relationships

: Based on our 3 questions, I believe you are The Lover. This suggests you're naturally passionate, appreciative. As a The Lover, you might enjoy "Pride and Prejudice", "The Notebook", or Cooking for loved ones. How does that resonate with you?


5. Sample dialogues handled by the system





Dialogue C: Psychology + Recommendation

: Hi, tell me what you love and I will guess who you are. Or I will make you questions.

: I love hiking.

: Based on you saying "I love hiking", I detect you might be the "The Lover" archetype! Key traits: nature-loving, outdoorsy, romantic, loving. Would you like recommendations or to continue exploring?

: Yeah, give me one book recommendation.

: "The Seven Husbands of Evelyn Hugo" by Taylor Jenkins Reid is a heartwarming and engaging novel about the life of reclusive Hollywood star Evelyn Hugo, and her seven marriages to men who all had secrets that shaped her life in unexpected ways. This book combines elements of drama, romance, and social justice, making it a captivating read for anyone looking for a story with depth and relatability.

6. Demo



1. Connect OLLAMA

```
ssh -f -N -p 62266 -L 11434:127.0.0.1:11434 mltgpu
```

2. Run the localhost | <http://localhost:5173/>

```
cd /Users/lealimarco/Desktop/dialogue_systems_2/project/DM/src  
yarn dev
```

7. Discussion

✓ Capabilities

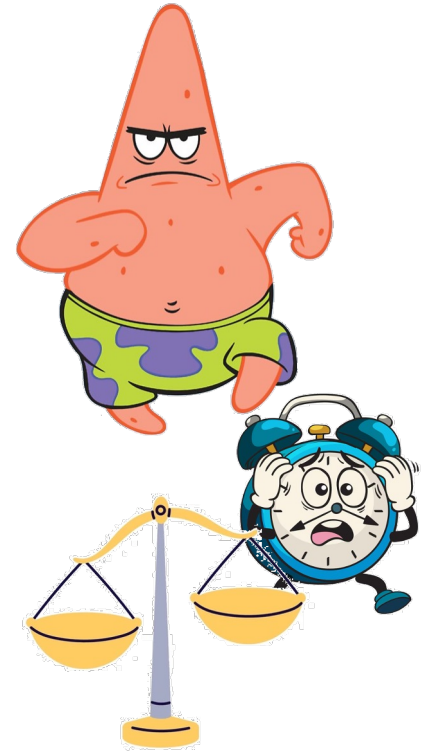
- Multi-turn psychology questioning sequences
- Immediate **archetype detection** from user statements
- **Personalized recommendation** delivery
- Natural transitions between **questioning and analysis**
- **Restart and quit** conversation management



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⚠ Limitations

- Over-eager analysis: Sometimes detects archetypes **too quickly** from minimal information. Very unstable and unpredictable
- Question flow rigidity: **Fixed question** sequence can feel mechanical
- Recommendation timing: **Balancing** when to offer vs. when to wait for user requests
- Natural language variation: **Handling diverse ways** users express similar preferences
- Error detection of user requests



8. Future work

1. Data collection

1. Integrate other APIs (e.g. DevilAI, 16personality APIs)
2. Integrate dataset for MTBI evaluation

2. Enhanced Natural Language Understanding

1. Implement more sophisticated intent recognition
2. Add sentiment analysis for better response tailoring
3. Improve handling of ambiguous or contradictory statements

3. System improvements

1. Improve the transition from questioning to analysis
2. Debug-fixing: some functions are not correctly used and they can be better integrated
3. Improve the engagement that keeps users interested in personality discovery
4. Improve level of details of recommendations
5. Adaptive question selection on user responses

4. Extended Recommendation System

1. Real-time recommendation updates based on user feedback
2. Integration with external APIs (e.g. Spotify)





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Thank you for your attention!