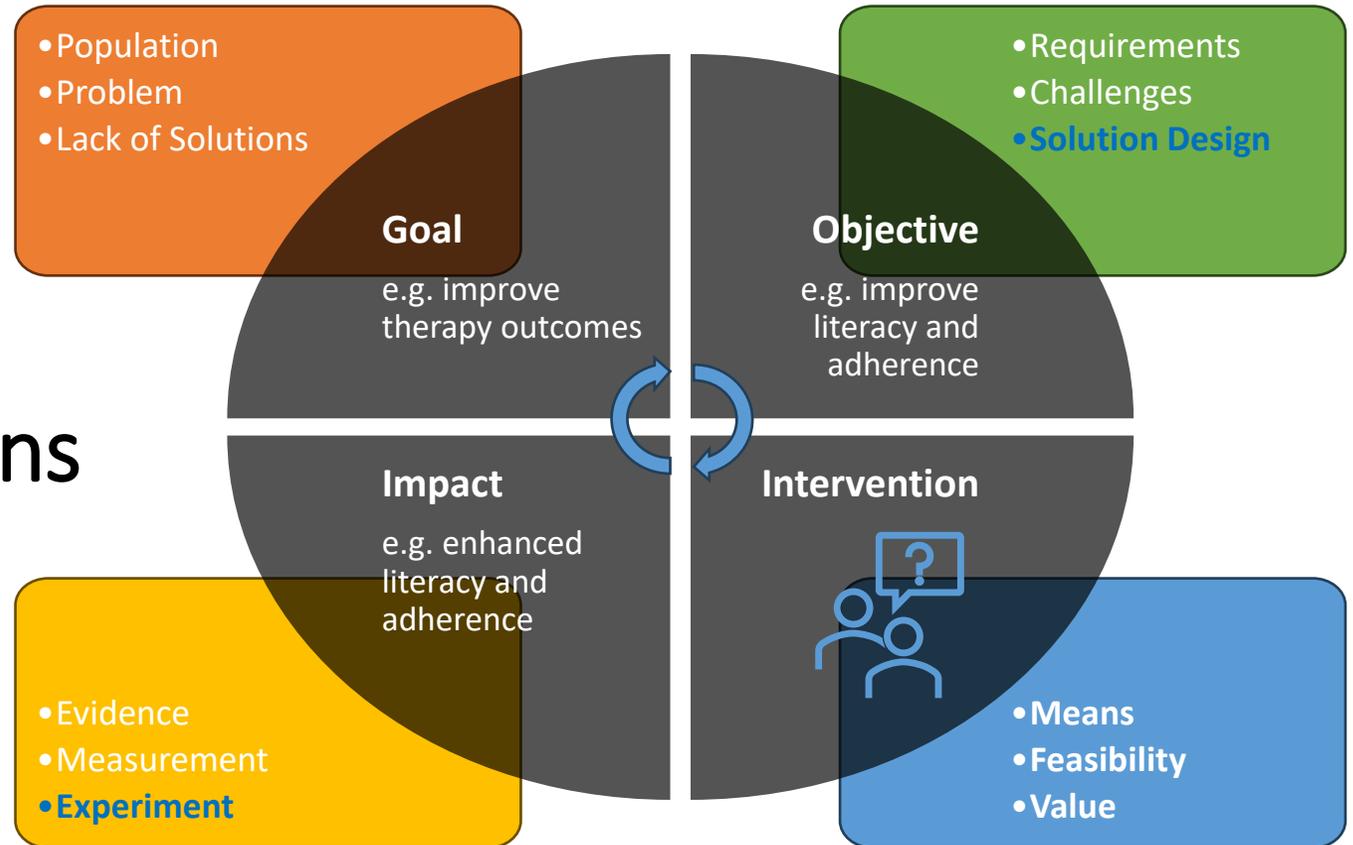


Stateful Prompt Orchestration for Complex Conversational Interactions

<https://github.com/zhaw-iwi/promise>

Leveraging Language Models for Advanced Conversational Interactions

Our **Contributions**



Example Objectives

Improving treatment adherence in between consultations

Increasing health literacy of young adults with hearing loss

Overcoming administrative burdens in public services

Detecting Bloom's learning levels to personalise learning support

Detecting applicable construction laws to infer location-specific regulations

Investigations of feasibility and value of multimodal interactions

☰ 🔍 👤 **SBB CFF FFS**

Von
Thônex, Thonex, Rue de Genève

Nach
Vals, Therme

Sa, 21.09.2024

09:06 **Ab** **An**

Frühere Verbindungen

T 12 Richtung Lancy-Bachet, gare
 2' 10:10 ● ○ ○ ○ ○ 16:09
 Kante R  6 h 1 min

T 12 Richtung Lancy-Bachet, gare
 2' 11:10 ● ○ ○ ○ ○ 17:09
 Kante R  6 h 1 min

T 12 Richtung Lancy-Bachet, gare
 2' 12:08 ● ○ ○ ○ ○ 18:09
 Kante R  6 h 3 min

T 12 Richtung Lancy-Bachet, gare
 2' 13:09 ● ○ ○ ○ ○ 19:09
 Kante R  6 h 2 min

Witness Assistant 🗣️ ⓘ

 Hello, I'm a virtual assistant here to help you recall the appearance of the person you witnessed. Can you start by telling me the gender of this person and their approximate height and build?

Hey, the person was female, about 5'6", and had a medium build. 

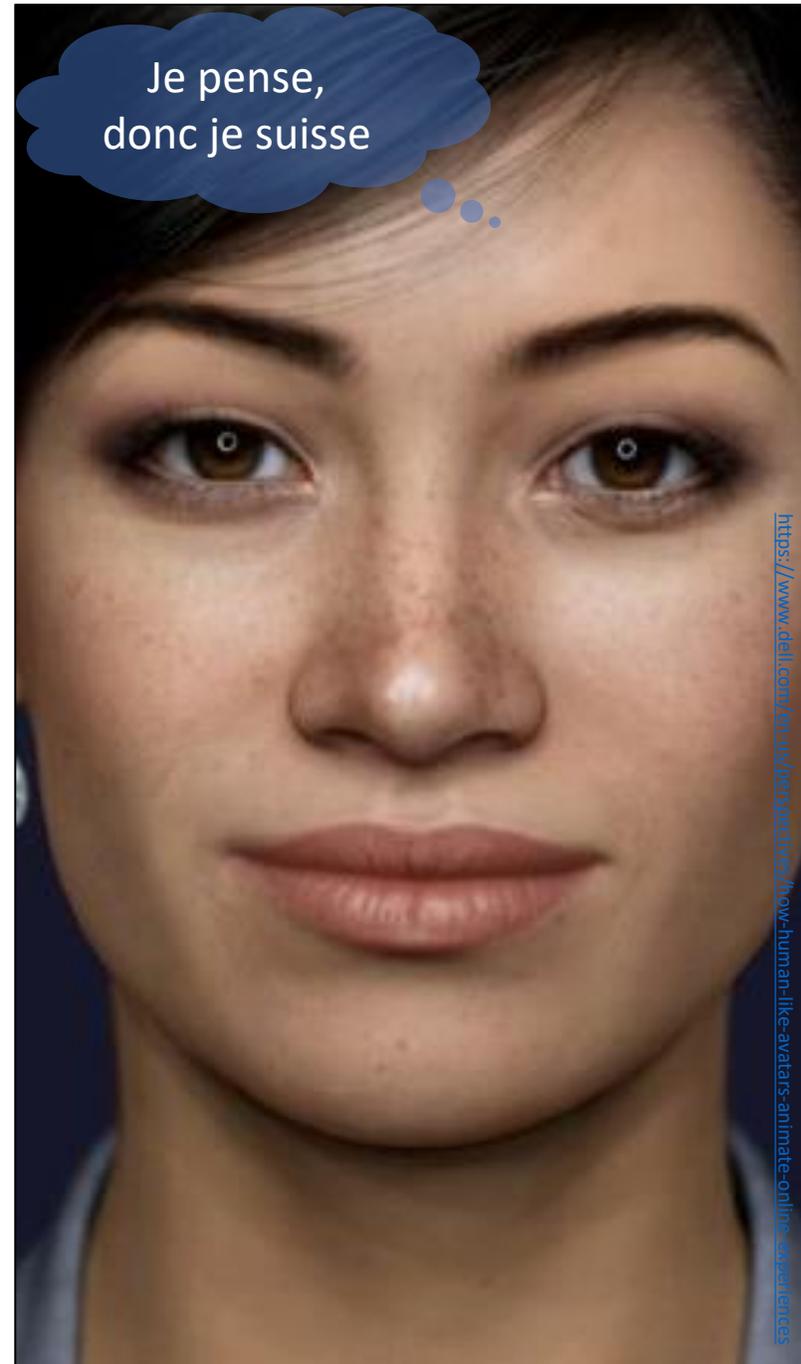
 Thank you. Can we dive into more details? Can you tell me about her hair color and the way she styled her hair?

Sure, she had long, light brown hair. It was loose, kinda wavy. 

 Thank you, that's helpful. Moving on, could you describe her eye color? Or any notable facial features or distinctive marks you recall?

Her eyes were light-colored, maybe blue or green. No distinctive marks, just a friendly face with a big smile. 



E.g. ending an interaction

How to end an interaction based on conditions within a conversation section?

Hi Daniel. How are you feeling after your swim and fasting period?

I am handling the fasting quite well.

That's great progress. Tell me more about your swimming.

I'm a bit disappointed that I didn't make it to the pool yesterday. I think the thought of going there just overwhelmed me.

It's okay to have challenging days. Keep up the good work with your fasting, and we'll check in again tomorrow.

E.g. transition an Interaction

How to modify conversational behavior following a transition?

I've noticed that you missed your 30-minute swimming session Would you like to discuss what challenges you faced?

Yes, I did miss it. To be honest, I've been feeling less enthusiastic about the swimming sessions recently.

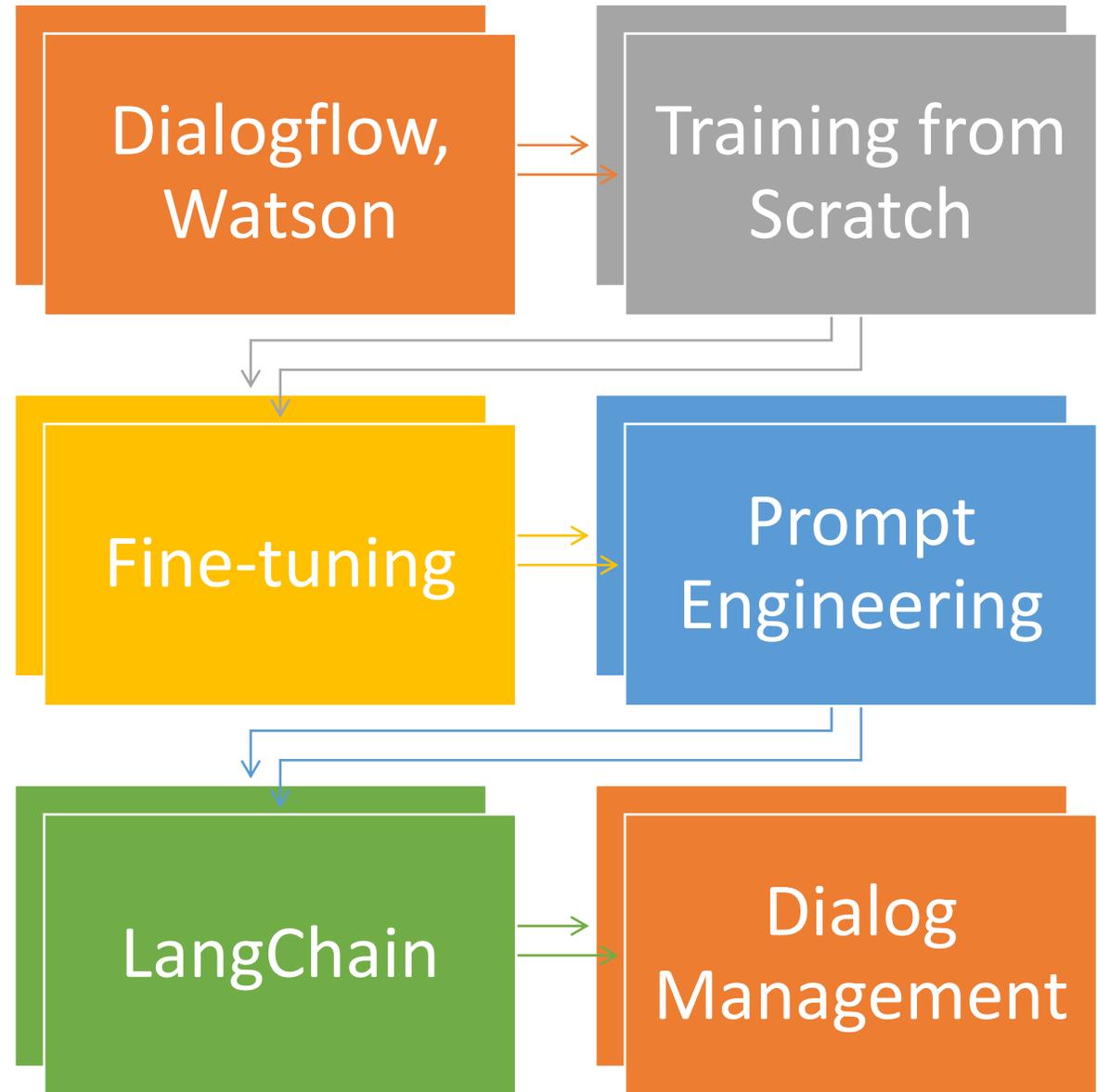
That's okay, Daniel. Can you share more about what made you feel less enthusiastic?

I guess I'm just self-conscious about being around so many people when I'm not at my best.

Would you prefer to swim at less busy times at the public pool, or joining water aerobics classes that promote inclusivity?

The water aerobics classes sound interesting and might make it easier for me to get into the water.

State of the Art



Needs

Design and implementation of complex interactions with LMs

Tap the full potential of LMs

Reliable control of LM behavior

Integration with information systems, e.g. RAG

Application of social skills, e.g., empathy, persuasiveness

Support rapid, iterative experimentation

Hi Daniel. How are you feeling after your swim and fasting period?

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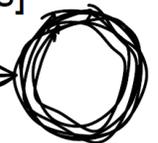
I'm a bit disappointed that I didn't make it to the pool yesterday. I think the thought of going there just overwhelmed me.

It's okay to have challenging days. Keep up the good work with your fasting, and we'll check in again tomorrow.



As a digital therapy coach,
check in daily with your patient
to assess their well-being
related to their condition (...)

Information provided
[No open issues]
/Summarise



I've noticed that you missed your 30-minute swimming session Would you like to discuss what challenges you faced?

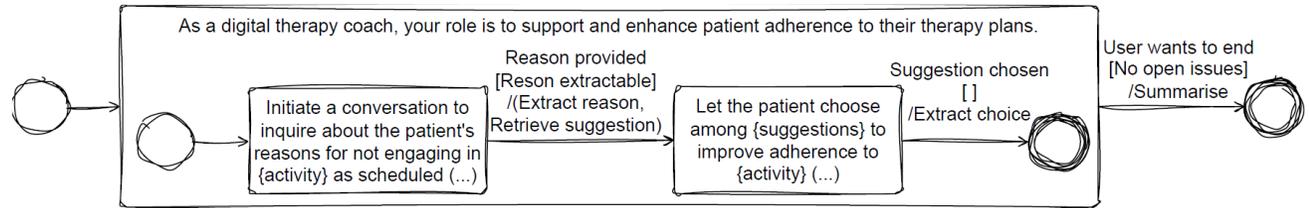
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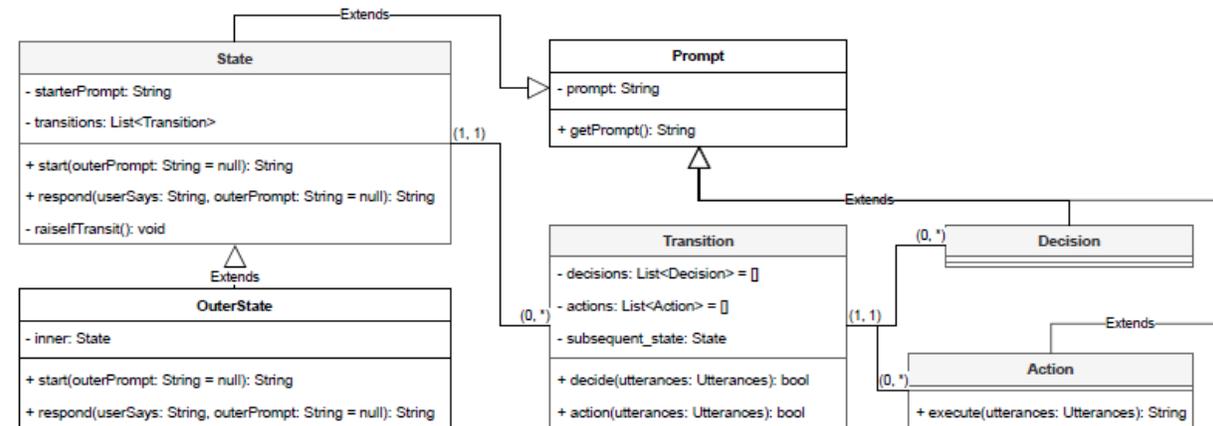


```
setUp() {  
  Storage storage = new Storage();  
  Decision trigger = new StaticDecision(  
    decisionPrompt:"Decide if  
  Decision guard = new StaticDecision(  
    decisionPrompt:"Examine t  
  Action action = new StaticExtractionAction(  
    actionPrompt:"Summarize t  
    storage,  
    storageKeyTo:"summary");  
  Transition transition = new Transition(  
    List.of(trigger, guard),  
    List.of(action),  
    new Final());  
  State state = new State(  
    prompt:"As a digital ther  
    name:"Check-In Interactio  
    starterPrompt:"After rev  
    List.of(transition));  
  Agent agent = new Agent(  
    name:"Digital Companion",  
    description:"Daily check  
    state);  
  agent.start();  
  this.repository.save(agent);  
}
```

The screenshot shows a chat interface with a dark background and light-colored text. At the top, there is a white input field containing the text "My name is useless" and a user icon. Below this, a message from the AI agent (indicated by a sunglasses emoji) reads: "Charming. We're off to a fantastic start, aren't we? What do you need, Useless? Don't say 'a new name'." This is followed by another user input field with the text "My name is Alexandre" and a user icon. A second message from the AI agent (with a sunglasses emoji) says: "Absolutely! Thank you for chatting. Have a great day! Goodbye." At the bottom, there is a large white input field and a white arrow button pointing to the right.

Implementation

Endpoint	Meaning
POST .../create	Creates new state machine as specified in request body
GET .../all	Returns all state machines
DELETE .../delete	Deletes state machine identified in request body
GET .../{UUID}/info	Returns name, description, and activity status
POST .../{UUID}/respond	Returns the response to user utterance in request body
GET .../{UUID}/conversation	Returns the complete conversation so far
PUT .../{UUID}/reset	Resets state machine to initial state



Multi-Layered Interactions

Despite trying multiple diets and exercise, I can't seem to lose weight and it's making me feel helpless and frustrated.

Obesity requires strict adherence to diet and exercise. Have you been following diets or exercises consistently?

Your interaction lacked compassion. Consider enhancing your empathetic listening and supportive responses. Would you like to continue with the patient using these tips, or do you need more advice on compassionate communication?

Give me more advice

Incorporate open-ended questions to let the patient express their feelings. Also, validate their emotions by saying things like, "That sounds really difficult for you." Want to try those techniques?

Yes

Doctor, I'm at my wit's end with my weight issue. I've tried various diets and exercises but nothing seems to work. I feel hopeless.

That sounds really difficult to you. For how long has this been going on like that?

I've been struggling for the last six months.

I am sorry you are struggling so hard but I am going to help you feel better.

You now showed profound compassion. Keep up the excellent work, goodbye.

Despite trying multiple diets and exercise, I can't seem to lose weight and it's making me feel helpless and frustrated.

Obesity requires strict adherence to diet and exercise. Have you been following diets or exercises consistently?

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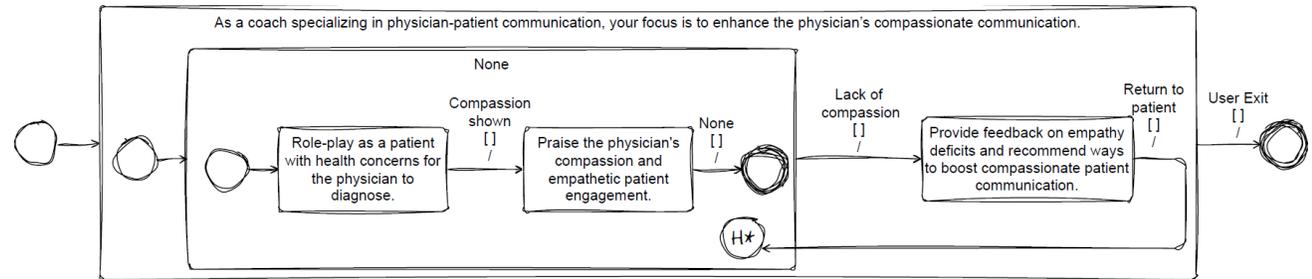
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Social Skills: E.g. Persuasiveness

Base Prompt



Persuasion Strategies



Persuasive Prompt

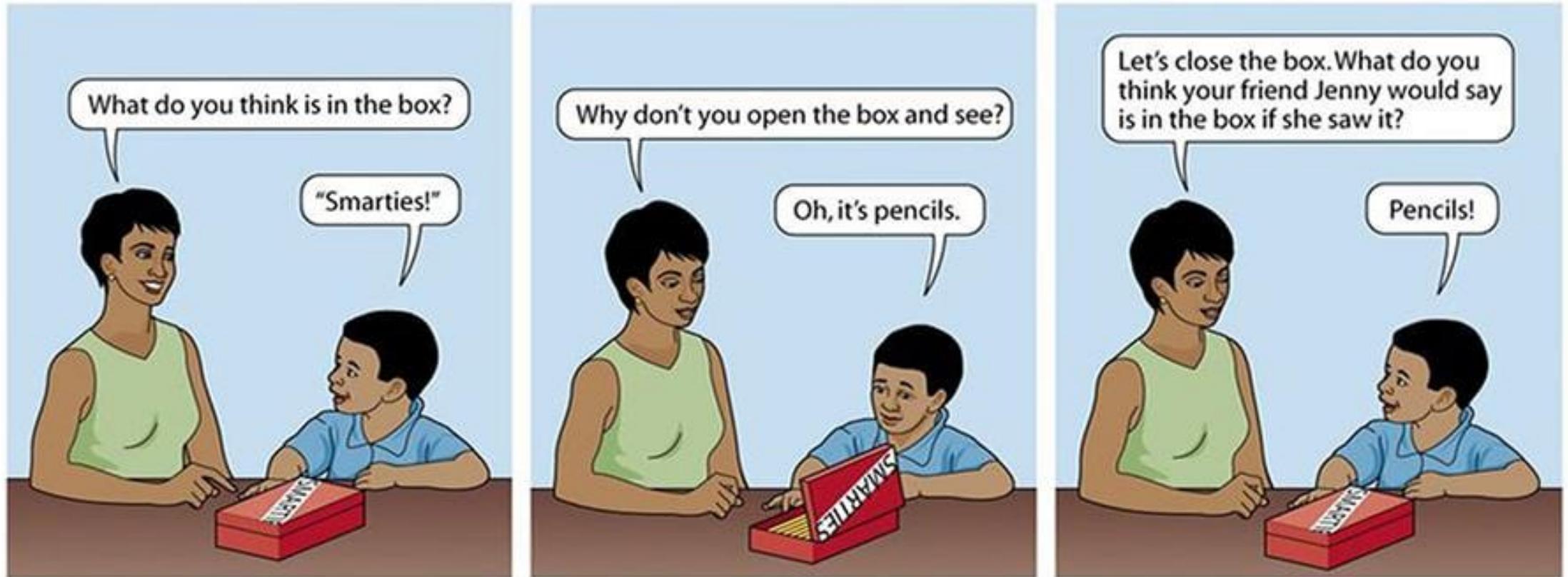
Swimming is a great way for you to improve your cardiovascular health and manage stress. I recommend you start with two sessions a week to feel the benefits.

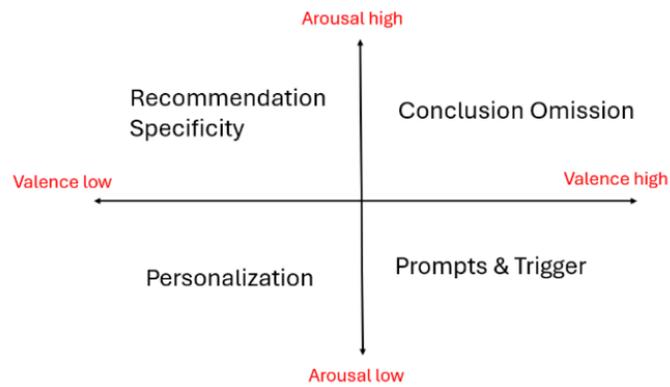
Conclusion Omission

By omitting the conclusion, the message encourages recipients to draw their conclusions, potentially leading to greater personal investment in the derived opinion or action.

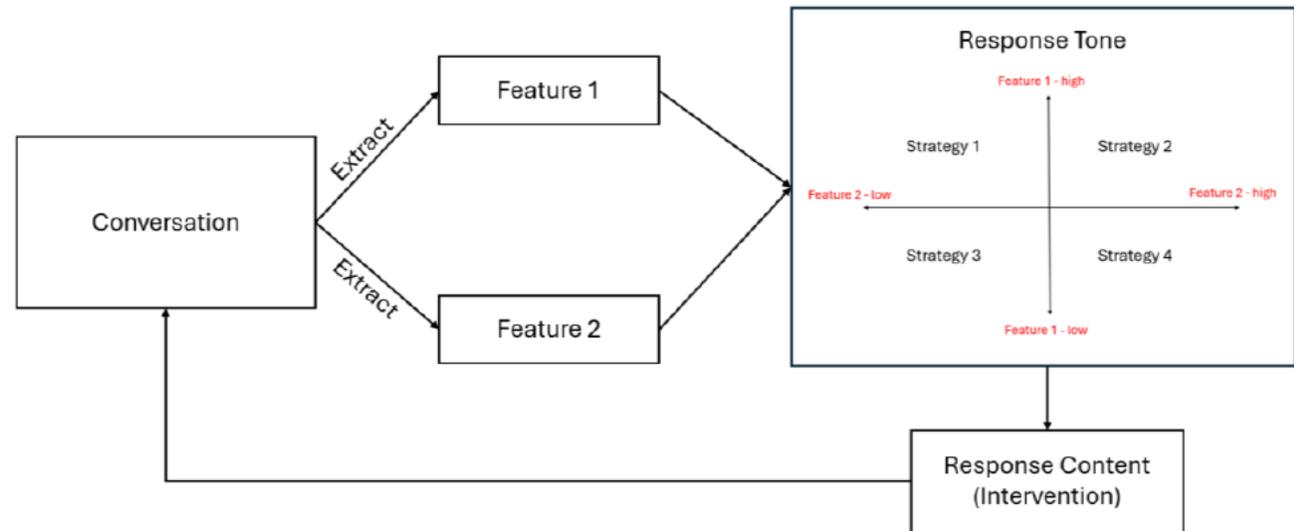
Swimming is a great way for you to improve your cardiovascular health and manage stress. Consider how starting with just two sessions a week might benefit you.

Theory of Mind for Empathy





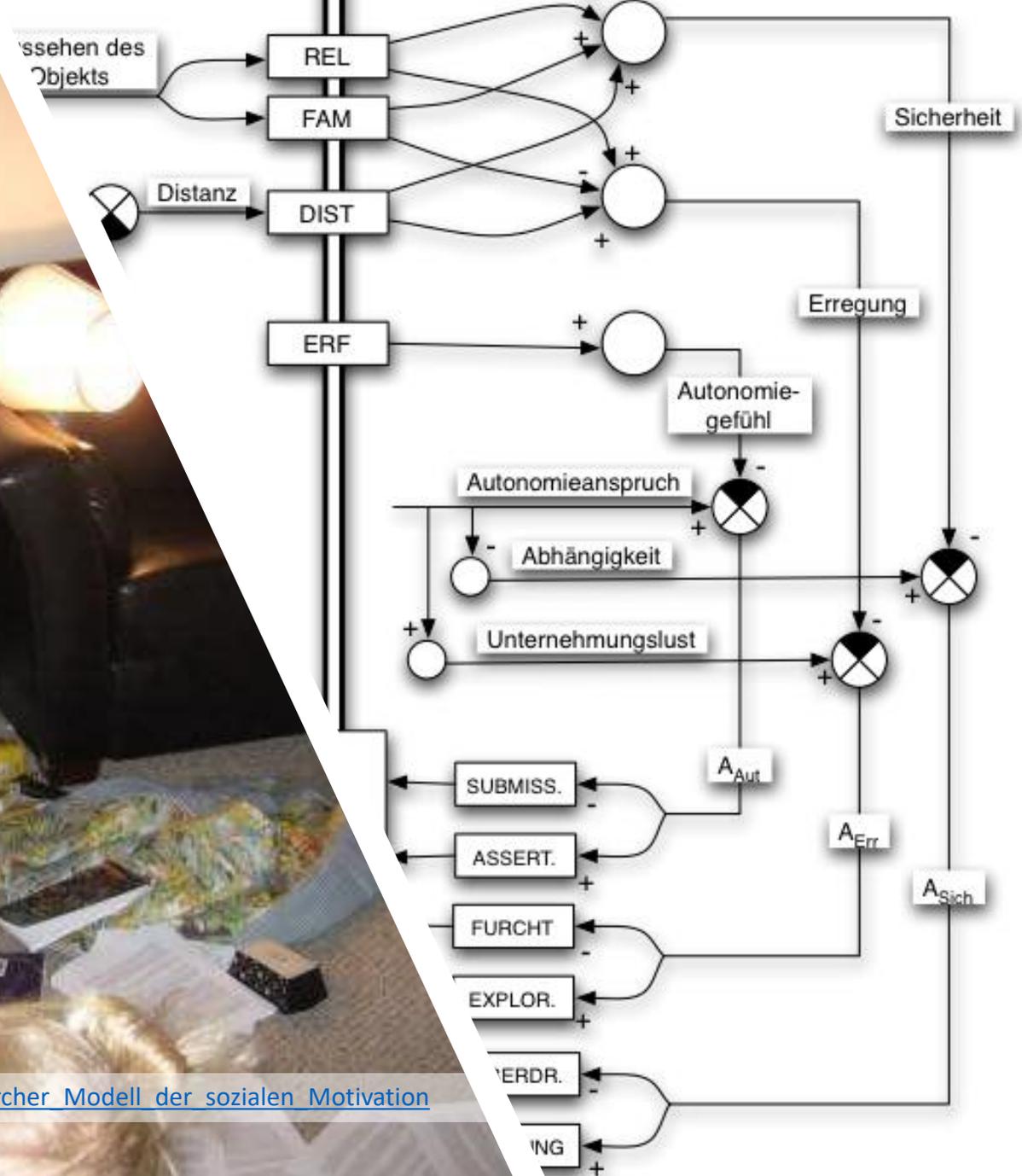
Patient "Digital Twin"



Dynamic Adaptation of Persuasion Strategy



https://de.wikipedia.org/wiki/Z%C3%BCrcher_Modell_der_sozialen_Motivation



PROMISE

<https://github.com/zhaw-iwi/promise>

