

Exercise 3: Conversational Agents

Human-AI Interaction

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A Prototype Conversational Agent

- Final goal
 - to *design* and *implement* an interactive prototype for a conversational agent
 - in *two weeks*
 - it should be vocal and/or textual (only or mainly, it is up to you)
 - the answers will be "fake"
 - it will always answer the same 2-3 things for each different question

Step 0

Choose your specialty!

On Feb 5

Step 0

- **Form** a team
 - the same of last time is ok
- **Decide** what the conversational agent should be able to "do"
 - you suggested some interesting topics on the first lecture: *food & cooking, transportation, sport, ...*
 - you can reuse some of those ideas
 - the "intelligence" should mainly be in the "conversational" part
 - write it down the topic/idea/problem to be solved
 - e.g., "*our app will support/help/... people to...*"
 - in a slide

Step 1

Design the Conversational Interface

On Feb 5

Step 1

- **Design** the conversational UI
 - in a slide
- Possible questions:
 - Which dialogues?
 - Will all the answers be textual/vocal, only?
 - How to recover from errors?
 - Which is the tone?
 - How many details?
 - ...
 - Which Human-AI Interaction guidelines follows and/or ignore? Why?

Use this!

- By Microsoft Research
 - <https://www.microsoft.com/en-us/research/project/guidelines-for-human-ai-interaction/>
- Saleema Amershi et al. Guidelines for Human-AI Interaction. ACM CHI 2019
 - <https://doi.org/10.1145/3290605.3300233>

Guidelines for Human-AI Interaction

The Guidelines for Human-AI Interaction will help you create AI systems and features that are human-centered. We hope you use them throughout your design process – as you evaluate existing ideas, brainstorm new ones, and collaborate with the multiple perspectives involved in creating AI.

These guidelines synthesize more than 20 years of thinking and research in human-AI interaction. Learn more: <https://aka.ms/aiguidelines>.

INITIALLY

- 1. **INITIALLY**: Make clear what the system can do. Help the user understand what the AI system is capable of doing.
- 2. **INITIALLY**: Make clear how well the system can do what it can do. Help the user understand how often the AI system may make mistakes.

DURING INTERACTION

- 3. **DURING INTERACTION**: Time services based on context. Time when to act or interrupt based on the user's current task and environment.
- 4. **DURING INTERACTION**: Show contextually relevant information. Display information relevant to the user's current task and environment.
- 5. **DURING INTERACTION**: Match relevant social norms. Ensure the experience is defined in a way that users would expect, given their social and cultural context.
- 6. **DURING INTERACTION**: Mitigate social biases. Ensure the AI system's language and behaviors do not reinforce undesirable and unfair stereotypes and biases.

WHEN WRONG

- 7. **WHEN WRONG**: Support efficient invocation. Make it easy to invoke or request the AI system's services when needed.
- 8. **WHEN WRONG**: Support efficient dismissal. Make it easy to dismiss or ignore unhelpful system services.
- 9. **WHEN WRONG**: Support efficient correction. Make it easy to edit, refine, or remove when the AI system is wrong.
- 10. **WHEN WRONG**: Scope services when in doubt. Engage in disambiguation or gracefully degrade the AI system's services when uncertain about a user's goals.
- 11. **WHEN WRONG**: Make clear why the system did what it did. Enable the user to access an explanation of why the AI system behaved as it did.

OVER TIME

- 12. **OVER TIME**: Remember recent interactions. Maintain short-term memory and allow the user to make efficient references to that memory.
- 13. **OVER TIME**: Learn from user behavior. Personalize the user's experience by learning from their actions over time.
- 14. **OVER TIME**: Update and adapt cautiously. Limit disruptive changes when updating and adapting the AI system's behaviors.
- 15. **OVER TIME**: Encourage granular feedback. Enable the user to provide feedback indicating their preferences during regular interaction with the AI system.
- 16. **OVER TIME**: Convey the consequences of user actions. Immediately update or convey how user actions will impact future behaviors of the AI system.
- 17. **OVER TIME**: Provide global controls. Allow the user to globally customize what the AI system monitors and how it behaves.
- 18. **OVER TIME**: Notify users about changes. Inform the user when the AI system adds or updates its capabilities.

Microsoft

Step 2

Share the idea and a significant dialog with the class!

On Feb 5

Step 3

Implement a Prototype!

On Feb 12

Step 3

- Implement an interactive prototype for your conversational agent
 - Choose the **main** functionalities!
 - One to two, only
- By using Dialogflow and Python
 - you can tweak/replace the HTML/CSS/JS part, if needed
- By starting from the example shown in class last week

Step 4

Share it!

On Feb 12

Step 4

- Present your prototype and the underlying idea in 10 minute
 - Put together the slides you prepared last time
 - Add a couple of screenshots/screen-recordings
 - Prepare a short demo
 - Connect your laptop to the projector... and speak!

Step 5

Submit it!

On Feb 12

Submission Instructions

- One per team, choose a "submitter"
- Convert the set of slides you prepared in PDF and name it as follows:
Lastname_Firstname_ex3.pdf (example: DeRussis_ex2.pdf)
- Upload the resulting file to OwnCloud, at the following URL:
<https://baltea.polito.it/owncloud/index.php/s/A1LgR3tJiKzBBU3>
- By the end of the week (**Feb 16, 2020**)