15. Chatbot

LING-351 Language Technology and LLMs

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What is a Chatbot?

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  - Anything else?

What build a chatbot?

Why do we need a chatbot?

“a chatbot might serve as a digital companion”

Movie *Her* (2013)
`https://www.youtube.com/watch?v=f9Hg1x-Ctlw`

Group discussion

(*Shared deck*)
Think about your own experiences with chatbots. Some prompting questions:

- Have you used any specific platforms (e.g., ChatGPT, Grok, Replika)?
- When did the interaction feel *good* or *bad*?
- What made the chatbot seem more (or less) like a genuine companion?
- Was it the language style, emotional tone, or responsiveness?
- What do you think was the chatbot's main purpose in that interaction?
- How does this relate to the idea of a "digital companion" in the movie *Her*?
- If you haven't had any experience yet, why do you think that is?

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- Language is often regarded as a key component in achieving artificial general intelligence (AGI)—the hypothetical ability of a machine to act with human-like *sentience* and *self-awareness*.

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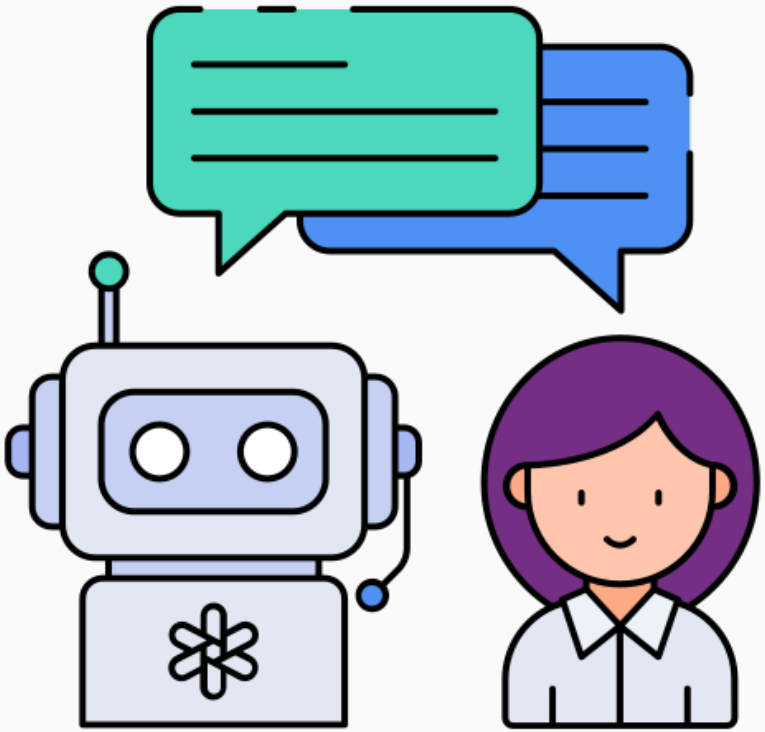
More thoughts



For any given chatbot, it’s often unclear whether it is meant to be a social companion, a scientific experiment, or both—or whether the purpose is left for the **user to decide**.

How to build a chatbot?

Several ways to build a chatbot

1. Brute force
2. Rule-based
3. Corpus-trained
4. Language generation task

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- It mimics understanding through memorization rather than reasoning.

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- By asking questions rather than making statements, ELIZA maintains surface-level relevance without true understanding.
- Like brute-force systems, rule-based chatbots lack awareness of self, user, or world, and their rule sets quickly become complex, rigid, and incomplete.

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- This approach aims for conversational relevance and maintains quality, quantity, and manner by reusing well-formed, contextually appropriate sentences.
- The chatbot's "knowledge" of itself, the user, and the world is limited to what is encoded in the corpus.

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- Modern generative chatbots still rely partly on **brute-force scripts** for sensitive or restricted topics, and may use a scripted “autobiography” to define their identity.
- They represent the world, the user, and prior context through the information encoded in their training data.

Evaluation

Evaluating chatbots

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  - for intelligence is tested by human-likeness or reasoning ability.

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  - **Formal:** systematic, objective — like an exam, with fixed questions and scoring criteria.

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  - **Self-concept:** consistency across multiple turns.
  - **Common Ground:** memory of prior context.
  - **Interlocutor model:** understanding implied meaning.
  - **World knowledge:** reasoning about everyday facts (e.g., “Can a tennis ball fit into a toaster?”).

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- On Thursday: We will build a simple chatbot using RAG (Retrieval-Augmented Generation).