Chat bots and virtual assistants
Journal

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Abstract

I find the topic of chat bots and virtual assistants really cool. I will try to gather here some information found on the web.

1 Limitations of current bots

In this section, I will try to list current limitations that the bots seem to have. Typically things that humans would do right but that bots do wrong:

1. (01.03.19) I'm not sure that a bot can easily understand that it has done a mistake and not repeat it again. If there is a term which is ambiguous, like "backhoe" in the riggs app and the computer tries to react to meaning 1, and the user says "no, I meant meaning 2", I wonder how the bot could understand.

2. (01.03.19) I wonder if a bot can learn to fit its user need while talking with him/her.

2 Journal

30.04.18 ∼ Chat bots: Tai, Xiaoice, Named entity recognition, A nice blog about NLP
It seems that some fairly advanced chatbots already exist:
Wiki: Xiaoice
Wiki: Tay

01.05.18 ∼ Google assistant, Dialogflow (API.AI), some french companies making chatbots
I discovered the company **Dialogflow** owned by google:
Wiki: Dialogflow
and also read about **Google assitant**:
Wiki: Goolge Assitant

I also discovered the following french companies/start-ups specialized in chatbots:

- Zelros: `http://www.zelros.com/`

- recast ai: `https://recast.ai/`

- golembot: `http://golembot.net/`

02.05.18 ∼ A Coursera course to build your own bot
Roman recommended this course about NLP:
`https://www.coursera.org/learn/language-processing`
In the description of the course, they say that the final project consist in building your own chatbot.

09.01.19 ∼ 5 levels of Chat bots

This page explains what are the 5 levels of chat bots. For now we are currently reaching level 3 (Google is at least):
`https://www.oreilly.com/ideas/the-next-generation-of-ai-assistants-in-enterprise`

01.01.19 ∼ Conversation One: The anatomy of a modern conversation application

Vijeta shared this link which gives an idea of concepts like **ontology** (which from my understanding comes down to the definition of intents and entities related to the domain), and how to implement a DM using the context:
`https://conversation.one/2017/10/25/anatomy-modern-conversational-application/`

06.01.19 ∼ Rasa Core and Interactive learning

In this article:
`https://blog.rasa.com/a-new-approach-to-conversational-software/`
it is explained that Rasa developped a way to create a DM using "interractive learning" which is a kind of reinforcement learning with feedback at every message, to build a good probabilistic model. I guess that it is good for the intent classification. It seems to be quite easy to use.

19.03.19 ∼ Article detailing components of a chat bots (with shallow semantic parsing)

Mijail shared this article:
`http://aclweb.org/anthology/D18-2027`
which presents the general architecture of a virtual assistant, decomposing it into:

1. Intent Classification (Domain Classifier + Intent Classifier)

2. Entity Recognition

3. Entity Resolution

4. Semantic Praser (Entity Role Classifier + Entity Group Parser)

5. Question Answerer

6. Dialogue Manager

7. Application Manager

14.04.19 ∼ The rise of consciousness from Kurzgesagt

In this video:
`https://www.youtube.com/watch?v=H6u0VBqNBQ8`
the guys of Kurzgesagt explain what are the different stages of consciousness. This could be helpful to help us design an intelligent robot. Here are the stages:

1. Unaware of its environment but receives input (food or not food). There is an inner process (here converting food into energy) which triggers reactions (like moving more when no food is (randomly) collected).

2. Same as before but with **receptors** which help it target its food, meaning that the inputs of these receptors affect its behaviour. They blindly follow the signals of their sensors giving them an idea of the direction in which to go.

3. Same as before but with more refined receptors like **eyes** which give information not only about the presence or absence of food but also about the rest of the environment and potential obstacles.

4. Same as before but with an "**inner representation of the world**" allowing the creature to pursue food even if its sensors don't detect it anymore. This is linked to the gift of **memory**.

5. Same as before but with a **sense of time**. This means being able to visualize a reward which only exists in the future.

6. The next level is the pocession of **language**.