

IRIS (INFORMAL RESPONSE INTERACTIVE SYSTEM) RE-WOCHAT 2016 - SHARED TASK CHATBOT DESCRIPTION REPORT

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Abstract

This report describes IRIS (Informal Response Interactive System), a chat-oriented dialogue system based on the vector space model framework. IRIS was one of the systems made available as part of the RE-WOCHAT Shared Task platform for collecting human-chatbot dialogue sessions.

1 IRIS General Description

IRIS is a chatbot who is conversant in a large variety of topics. She has been “watching” movies for a while and has learned chatting patterns from the dialogues in the movies. She has such a very good memory that she is able to chat based on semantic associations she builds between a given chatting session and all the movies she “watched” before! Sometimes, she is also able to learn some basic concepts from the people she chats with.



Figure 1: IRIS Chatbot Avatar

IRIS is like a nice teenager that likes to chat with people, although sometimes she can lose her temper and become a little bit naughty. However, most of the time, she behaves like a good chatbot! IRIS impersonation is depicted in Figure 1.

2 IRIS Technical Description

IRIS is a data-driven chatbot engine (Banchs and Li, 2012) that has been trained with dialogues from movies (Banchs, 2012). IRIS response selection is based on a two-level semantic matching strategy (turn and dialogue history), which has been shown to outperform a baseline turn-level search strategy (Banchs and Kim, 2014). Semantic matching in IRIS is based on cosine similarity over the vector space model.

Figure 2 depicts a diagram of the overall system architecture for the IRIS chatbot system.

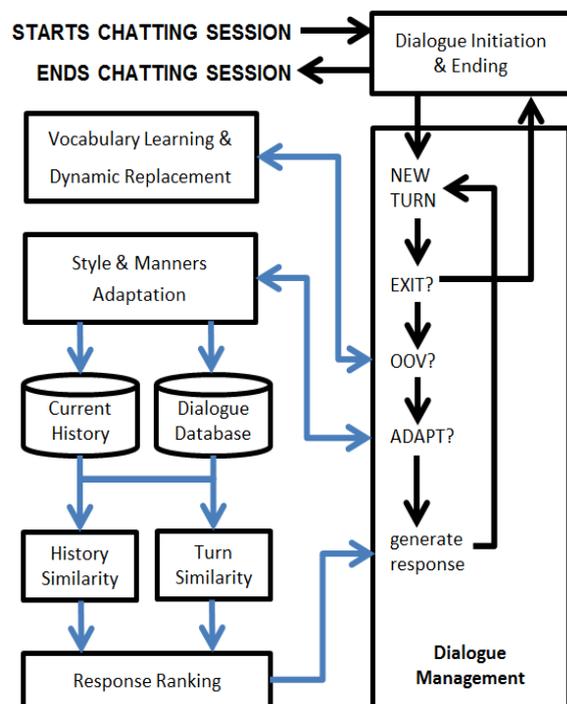


Figure 2: IRIS Overall System Architecture

As seen from the figure, in addition to its main dialogue management loop, IRIS has several different components. These include: (1) a rule-based initiation/ending module that allows for smoothly starting and ending chatting sessions; (2) a vocabulary learning module that allows for memorizing and reusing definitions that are provided by the users; (3) a style & manners adaptation component inspired on the Rocchio’s relevance feedback algorithm (Banchs and Li, 2012); and (4) the two-level semantic similarity matching and ranking module, which selects final system responses from the database of movie dialogues.

It is important to mention that IRIS implements a response raking strategy that favors recall. This allows for the system to increase the variability of its responses, as well as to change topics in a more natural way.

3 Sample Dialogue Session

For the purpose of RE-WOCHAT Shared Task on data collection and annotation, an online version of IRIS was made available. Table 1 presents one example of the collected chat sessions.

Table 1: Sample Session with IRIS

1	USER: hi iris, how old are you
2	IRIS: Thirty-three next month.
3	USER: wow that is great
4	IRIS: I know. Dreadful, isn't it?
5	USER: not sure about it
6	IRIS: Sure.
7	USER: ok, tell me a joke
8	IRIS: Ok.
9	USER: go ahead please
10	IRIS: Thank y... The line goes DEAD.
11	USER: ha ha ha
12	IRIS: No, have fun first. Then laugh. Now...

The implemented online version of IRIS is based on a JavaScript/PHP client that communicates with a standalone version of IRIS running as a server. The client’s URL is available through the workshop’s website: http://workshop.colips.org/re-wochat/chatbot_info.html. The current implementation is restricted to one single user at a time.

4 Data Collection in the Shared Task

Since the online version of IRIS has been available (until the time this report was written), a total of 104 chatting sessions have been collected. In total, these sessions comprise about 2.5K turns and 12.3K running words, corresponding to an average of 5 words per turn and 24 turns per session.

From all these sessions, 64 of them have been manually evaluated at the turn level by participants of the Shared Task. All collected sessions and the corresponding annotations will be made available to the research community in the workshop’s website. Both, data collection and data annotation, efforts will continue over time and will be reported in future editions of the workshop.

5 Future Work and Development

The main limitation of the current online version of IRIS is that it can only chat with one person at a time. In this sense, developing and multi-thread version of IRIS is one of our priorities.

Another important component to be improved is the response ranking module. A detailed analysis of IRIS’ lists of candidate responses has shown that the system can be significantly improved by better selecting the responses.

References

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