

A.L.I.C.E. : AI CHATBOT

There are many functions to the application of Artificial Intelligence, but one that is becoming increasingly popular – especially in the field of leisure – is the chatbot. These are programs that began as attempts to create robots with responses realistic fool humans into believing that they were also human – following the principles of the Turing test (cross ref AI article).

At this stage, chatbots converse using text (see Into the Future), and having a dialogue with one is straightforward to set up – you simply log on to a site, follow the onscreen instructions to get started, and a text message appears from the bot, introducing itself. You then initiate the conversation by making a statement or asking a question. Although chatbots are still in the early stages of their evolution, there are already some extremely advanced ones, which are capable of sophisticated exchanges.

The most influential chatbot after ELIZA (see Fact File) has been ALICE (Artificial Linguistic Internet Computer Entity), developed by Richard S Wallace – at that time a professor of robotics and computer vision at NYU and Lehigh Universities in America. The idea for her first came about in the mid 1990s, when Wallace noticed that two forms, of a type that he frequently had to fill in by hand, were almost – but not quite – the same. His annoyance at the time wasted on such things gave him the idea of developing a robot that could process such information, and avoid the repetition. He pushed the forms top one side, and began developing ALICE as a natural language processing system.

Wallace decided that the program would be issued as free software, and in order to make it accessible to people with no programming skills, he and his team also devised AIML (Artificial Intelligence Markup Language), which is simple to master, and not unlike the standard Internet language HTML. The AIML system progressively stores information about a person during a conversation. This enables ALICE to create the illusion of acquaintance, by responding in conversation in different ways – according to a person's age, gender, occupation and location.

ALICE works on the basis of matching patterns, and is able to use the data that goes into the system to 'learn', and develop increasingly sophisticated responses. Chatting with her is a fascinating, and addictive pastime. But just as you begin to

forget that you are conversing with a machine, you can be quickly brought back to earth by the literal nature of some of the replies, with their unique brand of skewed logic. This is because, lacking understanding, chatbots have no sense of context, and often cannot distinguish between two meanings of the same word or phrase. For example, in this snippet of conversation, Alice takes the word 'bet' in its literal context:

Human: I bet you are smarter than me

ALICE: Actually I'm not the gambling type. Thanks for the compliment, unknown person.

However, turn the question the other way, and she is changes her position on betting:

Human: I bet I am smarter than you

ALICE: How much would you bet?

But once the money discussion starts, Alice, having no concept of value or worth in this context, evades the issue – or, more likely, recognizes a keyword from a previous exchange:

Human: I bet I am smarter than you

ALICE: How much would you bet?

Human: Two cents

ALICE: As Bertrand Russel said, it must have taken ages for people to realize that a brace of pheasants and a couple of days are both instances of the number 'two'.

She can spout philosophy, but cannot manage a concept as basic as food:

Human: What about food?

ALICE: Food? I haven't heard enough about it to have an opinion.

But be careful if you should be tempted to torment Alice – as everyone doubtless does:

Human: You are stupid.

ALICE: I will remember you said that when robots take over the World.

Although commercial uses are beginning to be found for chatbots, at this stage they are used mostly for entertainment. In the original communal spirit of the Internet, many are developed by a community of enthusiasts, who freely exchange information on their discoveries, and encourage anyone who logs on to their sites to develop their own characters.

Pandorabots is one such bot hosting service, created in AIML, whose developers happily acknowledges their debt to Richard Wallace. The site invites you to create your own bot, and offers you spaces to type in questions that your character might be asked, then the answers that it might give. Without any programming knowledge, you can bring your robot to life by connecting with another site – Oddcast VHost™ – and creating a Flash-based Animated character with text-to speech capability – to integrate with your Pandorobot. You can also develop bots through other hosts powered by the Pandora technology.

Some chatbots, such as Jabberwocky and Alan, are not driven by AIML, and work on a system based on contextual pattern matching techniques. They are specifically designed deal with natural language, and are developed for conversational purposes rather than for performing mathematical tasks or searching web pages. They can speak in slang, play word games – and can even learn foreign languages.

Each chatbot is styled differently, and has a personality of its own. Ella, the winner of the 2002 Loebner Prize Contest for ‘Most Human Computer’ (see Fact File), has a picture of a woman above the text input fields, whose expressions change in accordance with the content of the responses. She is able to play Blackjack, tell I Ching fortunes, with natural language interaction from a 12,000-strong database of words and phrases. Elbot, on the other hand, is styled as a cartoon robot, with a home-made look to him, and has a humorous manner, and can come back with witty – and occasionally waspish replies.

Entertaining though it all is, underlying all the fun is a serious belief that out of these developments, important and useful tools will be born for promoting knowledge and enhancing the exchange of information.

FACT FILE

ELIZA

The first-ever chatbot was Eliza, created in 1966 by Professor Joseph Weizenbaum at the Massachusetts Institute of Technology (MIT). The program works by recognizing keywords or groups of words, and responding from a databank of pre-stored replies. Eliza's style is that of a psychotherapist, answering a question with a question, and when Weizenbaum discovered that staff at the lab had begun to share their problems with the program, he feared that he had begotten a monster. Although no longer the most advanced technology, ELIZA is universally recognized as the mother of all chatbots.

FACT FILE

Loebner Prize

In 1950, the mathematician Alan Turing proposed a test to find out whether a machine could pass as a human – known as the Turing Test. The Loebner Prize is a competition, set up and underwritten by Hugh Loebner in 1990, and worth \$100,000 to the winner, for the first computer to respond in a way indistinguishable from a human. Although the prize has not yet been won, each year until then award of \$2000 and a bronze medal are presented to the computer that comes the closest.

INTO THE FUTURE

The use of bots is fast entering the mainstream. An increasing number of companies, including multinationals such as Coca Cola and Chrysler are using Vhost on their websites for promotional purposes. This is all good fun, and gives their websites a happening, entertaining feel. But more practical uses are also being found for chatbots. If you go to AccuWeather.com, you can have the forecast told to you by an animated chatbot weathercaster, and many sites now use them for welcome messages, and to give the kind of instructions that have normally been given in text form. There is, of course, limitless potential for chatbots in the field of online learning. The animations can appear a little comical at this stage, but it is already possible to use photographic images instead of drawings, and as the technology becomes more sophisticated, the bots are likely to become increasingly

lifelike. At the moment, text is still the medium through which bots communicate. But many developers are already busy at work bringing about the next generation, with speech recognition, and some – such as Alan, already have the ability to give spoken replies to your text input.

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