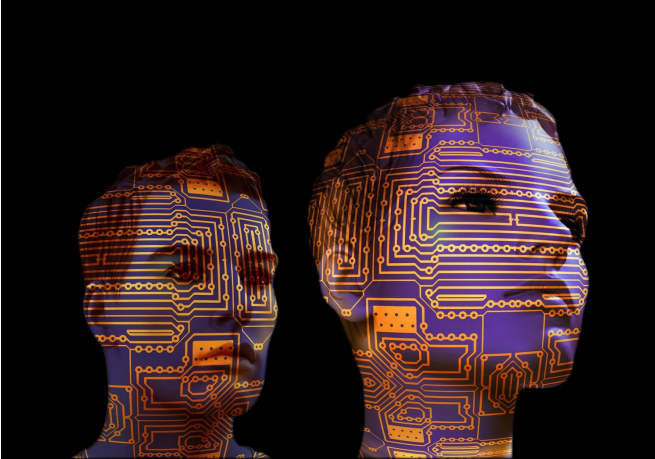


Can AI love advice help Harry go out with Sally?

30 January 2017, by Nancy Owano



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(Tech Xplore)—How do I tell her I like her? Should I tell her I love her? What if he is not interested in me?

Male and female lonely hearts keep advice columnists in their jobs, dispensing information that the reader perceives is from the heart.

What if the advice is from a machine? Watch for artificial intelligence researchers attempting to cross the line from machines dispensing straightforward facts to machines dispensing comments on relationships.

A Japanese technology company, NTT Resonant, has trained an AI system to give love advice to troubled hearts.

The Japan Times reported last year it had started a service using artificial intelligence to provide love-life [advice](#).

Kata Karáth in *New Scientist* reported recently on this "virtual agony aunt" and so did the *Daily Mail*.

NTT [Resonant](#), a wholly-owned subsidiary of the NTT Group, operates the Goo web portal, and the team [trained](#) their algorithm using almost 190,000 questions and 770,000 answers from the company's Oshiete goo forum, said Karáth.

Whether or not their AI unleashed for advice to the lovelorn will cause many people to marry— or advise them how to break up without tears— remains to be seen. In the bigger picture, tech watchers have their eye on what the researchers have done to suggest that AI can handle non-fact questions.

As reports on their system pointed out, word use may depend on context. And how much can [artificial intelligence](#) understand ambiguous word usage in questions?

"Most chatbots today are only able to give you very short answers, and mainly just for factual questions," said Makoto Nakatsuji at NTT Resonant, in the report from *New Scientist*.

"Questions about love, especially in Japan, can often be a page long and complicated. They include a lot of context like family or school, which makes it hard to generate long and satisfying answers."

The team came up with a structure for answers, said Karáth, that "includes a sentence showing sympathy, a suggested solution to the problem, an additional comment and a note of encouragement."

Nonetheless, Abigail Beall in *Daily Mail* commented, "It still sounds somewhat robotic, with responses like: 'I can see this is a difficult time for you. I understand your [feelings](#).'"

Their approach reportedly has its limits. It might be OK for dispensing love advice, but the approach would be unable to write an essay, said Di Wang at Carnegie Mellon University. Quoted in *New Scientist*, he said, "We don't even have a clear definition of 'understanding' [in the context of AI], so

an AI can only grasp the very shallow surface of things."

New Scientist remarked that, "For now, the answers still come across as a bit scripted, but they make sense." Therein might be the key justification for showing interest in their work, in the ability to come up with sentences that read clearly.

The team has authored a paper, "Can AI Generate Love Advice? Toward Neural Answer Generation for Non-Factoid Questions," by Makoto Nakatsuji, Hisashi Ito, Naruhiro Ikeda, Shota Sagara and Akihisa Fujita. They stated that "this paper proposes a neural answer construction model; it fills the gap between answer selection and generation and is the first model to move beyond the current simple answer selection model for non-factoid QAs."

They wrote that their method incorporates the "biases of semantics behind questions into word embeddings to improve the accuracy of answer selection. It then simultaneously learns the optimum combination of answer sentences as well as the closeness between questions and sentences."

They said their evaluation showed their method achieves 20 percent higher accuracy in answer construction than the method based on the current best answer selection method. "Our model presents an important direction for future studies on answer generation."

More information: CAN AI GENERATE LOVE ADVICE? TOWARD NEURAL ANSWER GENERATION FOR NON-FACTOID QUESTIONS: Makoto Nakatsuji, et al. ICLR 2017. openreview.net/pdf?id=ryQbbFile

ABSTRACT

Deep learning methods that extract answers for non-factoid questions from QA sites are seen as critical since they can assist users in reaching their next decisions through conversations with AI systems. The current methods, however, have the following two problems: (1) They can not understand the ambiguous use of words in the questions as word usage can strongly depend on

the context (e.g. the word "relationship" has quite different meanings in the categories of Love advice and other categories). As a result, the accuracies of their answer selections are not good enough. (2) The current methods can only select from among the answers held by QA sites and can not generate new ones. Thus, they can not answer the questions that are somewhat different with those stored in QA sites. Our solution, Neural Answer Construction Model, tackles these problems as it: (1) Incorporates the biases of semantics behind questions (e.g. categories assigned to questions) into word embeddings while also computing them regardless of the semantics. As a result, it can extract answers that suit the contexts of words used in the question as well as following the common usage of words across semantics. This improves the accuracy of answer selection. (2) Uses biLSTM to compute the embeddings of questions as well as those of the sentences often used to form answers (e.g. sentences representing conclusions or those supplementing the conclusions). It then simultaneously learns the optimum combination of those sentences as well as the closeness between the question and those sentences. As a result, our model can construct an answer that corresponds to the situation that underlies the question; it fills the gap between answer selection and generation and is the first model to move beyond the current simple answer selection model for non-factoid QAs. Evaluations using datasets created for love advice stored in the Japanese QA site, Oshiete goo, indicate that our model achieves 20 % higher accuracy in answer creation than the strong baselines. Our model is practical and has already been applied to the love advice service in Oshiete goo.

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