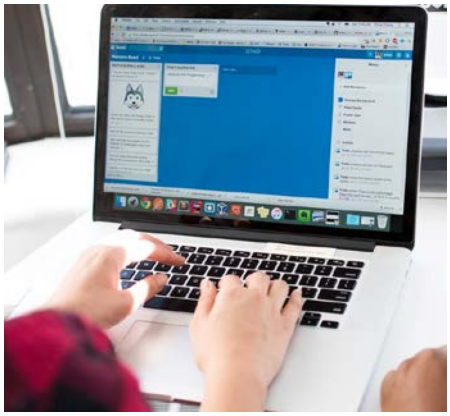
UNIVERSITY OF WATERLOO

TECHNOLOGY SUMMARY

Dialog & AI Based Search Engine Software



Background

The search engine industry is one of the most innovative industries in the U.S. and is expected to grow by 14.8% annually over the next five years to $83.6 billion. This is largely due to the highly profitable advertising system along with the increase in internet connectivity across the population. Additionally, improvements in economic conditions have enabled advertisers to flood the industry and operators are taking advantage of the increasing mobile search volumes to expand their multiplatform advertisers.

Description of the invention

This dialoged based and AI enabled, cloud-based software is developed through user-centred design approaches (i.e. involvement from targeted primary users). It employs natural language processing and deep learning such that an end user will have a Q & A type dialogue with the system to capture a problem he/she is encountering as well as relevant contextual information. The software system uses this information to perform a search, filter, and rank results of relevant online resources that complement the user's specific context. It can learn "meta-data" on websites relevant to user needs (e.g. if a user needs information on financial planning, an appropriate set of documents will be curated with that particular criterion). Users will be able to rate the "usefulness" of results, enabling the system to autonomously learn over time, improving future searches and results.

Current competitive search engines rely on personalized search or long-term search histories (i.e. they assume that the webpages most relevant to a user are those clicked frequently in the past by that user or related users, where similarity is measured by estimating user membership in a pre-defined set of categories). However, these methods typically generate large amounts of (mainly) irrelevant information, particularly in cases where the system at hand is unable to gather users' historical search history or the user' intent is obscured by an inadequate vocabulary.

Waterloo's software addresses all of these issues and has been validated in a family caregiver of a dementia patient use case. Specifically, caregivers rely on internet searches primarily for finding information to support with caregiving. By incorporating context, Waterloo's software technology is able to address the aforementioned issues with competitive technologies as the results are more closely tailored to the specific needs of the caregiver and care recipient.

Advantages

- Provides better search results by pro-actively adapting search results to the needs of the user.
- Learns "meta-data" on websites relevant to user needs.
- Semi-supervised learning (i.e. user rating of search results) enables system to perform progressively better searches.

Potential applications

- Smarter online searches with applications in most industries including advertising, e-commerce, education, etc.
- Database mining, internal proprietary data searches particularly where there are complex technical terms or meta-data (e.g. law firms, medical and pharmaceutical industries).

Reference
10142

Patent status
Provisional application filed.

Stage of development
Prototype developed, looking for industry partners to validate results.

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