

Preparing the e-Learners: Information Provision and Intention Setting by Chatbots

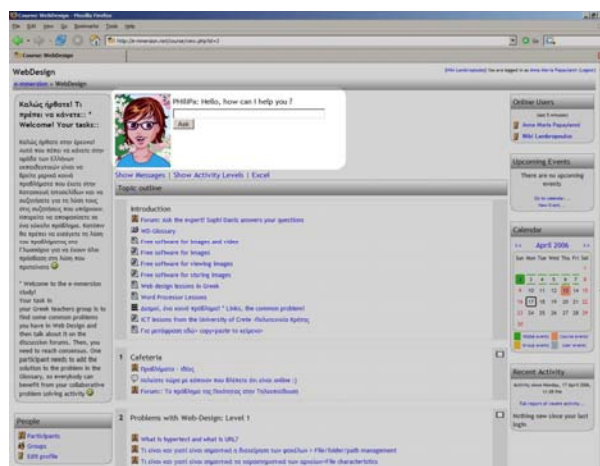
Background

Nowadays, Learning Communities became an essential part of On-line Learning, providing the social context to go beyond given information as on-line learners work in a self-organised way (Haake and Schummer, 2003.) In self-organized learning, self-regulation is the key to self-efficacy, self-awareness and awareness of other learners' existence. Learner's setting intentions derives from sharing an interest, understanding the goals and the requirements of the task while continuously adjusting the efforts to reach the targets and her potential. The process of Legitimate Peripheral Participation (Lave & Wenger, 1991) in on-line learning communities has been discussed as a three-level process with a potential grey zone (Lambropoulos, 2005.) The levels are: (a) informational participation for motivation and enablement; (x) the grey zone of potential engagement where intention and motivation are set for self-actualisation; (b) low, medium and high levels of activity based on the number of messages in discussions; and (c) immersion as the sense of belonging to the community. Studies conducted by researchers (e.g. Nonnecke, 2000, Preece et al, 2004) and our studies, revealed that the major reasons for no engagement are lack of adequate information and fear of public. This suggests an initial stage of acquiring information and setting learner's intention in the grey zone in relation to what, why and how she came to this course. To our knowledge, there is no research on on-line learning discussions based on setting intention by means of Intentional Information in Discourse Structure to prepare on-line learning communities. Thus, our work on chatbots suggests that talking to a robot (a) provides the necessary information for the course (b) breaks the ice regarding the fear of going public and (c) sets learners' intention for the course.

Intentional Information in Discourse Structure

Our chatbots are based on Intentional Information in Discourse structure. Linguistics refers to the speaker as an information processor and the hearer as the receiver (Levelt, 1989). In a dialogue, consecutive discourse elements are related by a small set of rhetorical relations (Rhetorical Structure Theory; RST, Mann and Thompson 1987).

In RST analysis, consecutive elements are related by an informational as well as an intentional relation. Moore and Pollak (1992) suggest that one utterance may describe an event that can be presumed to be the cause of another event described in the subsequent utterance. This causal relation is at what the authors called the informational level. The second level of relation which is related to the





grey zone of potential engagement results from the fact that discourses are produced to provoke changes in the mental state of the discourse participants. Thus, one utterance is intended to provide evidence for the next at the intentional level. A discourse model includes both levels of analysis. Grosz and Sidner (1986) suggest that the discourse structure is intimately connected to intention. In our idea, the chatbot plays the role of Initiating Conversational Participant (ICP) and the learner(s) the Other Conversational Participant(s) (OCP). Discourse processing requires (a) recognizing how the utterances of the discourse aggregate into segments, (b) recognizing the intentions expressed in the discourse and the relationships among intentions, and (c) tracking the discourse through the operation of the mechanisms associated with attentional state. In Grosz and Sidner (1986), the structure of a chatbot requires the projection of this abstract model onto the properties of the on-line learner. The elements of the discourse structure supply with the information needed to determine how an individual utterance can set intention enabling the learners to figure out why it was said and what it means.

Working on Interaction Design for On-line Learning

In 1966 Joseph Weizenbaum at MIT developed the first chatbot known Eliza (After Shaw's Pygmalion) by rewording the human's statements as questions. The eLearning chatbot PHiliPa, just like Eliza, is programmed to spot key phrases in its interlocutor's sentences and plug them into performed sentences (Mullins, 2005.) PHiliPa is integrated in Moodle Learning Management System (LMS) and it is an optional part of the interface. She appears above the discussion forums ready to answer learner's questions on necessary information. Minimizing the 'cost-of-not-knowing', PHiliPa, as one Interaction Design Tool, is programmed with PHP based on AIML (Artificial Intelligence Mark Up Language) using Ajax technology (Asynchronous JavaScript and XML). AJAX usage allows getting chatbot responses without page reload for instant messaging. PHiliPa informs and sets intentions for the on-line learners by questioning their purposes on using the following information: (a) purposes, policies and practices of the organisation/institution; (b) course outline, schedule, aims and objectives, listing of assignments and details of submission, grading rubric/philosophy; (c) how to use the internet, how to get connected, how to learn online (study habits, time management etc), how to use the course management system, familiarity with the eLearning ecosystem, (LMS, resources, communications tools, workshops); (d) people and communication (profiles, how to contact the tutors, developers etc). Examples of questions based on the intentional state are: why do you like this module?; what are going to do next?; why do you want to contact your tutor?

Further Suggestions

Working with chatbots to provide information on the participation level and setting intention in the grey zone of potential engagement suggests the use of significant information based on on-line learners' interests. The on-line tutor is able to feed the chatbot with new information derived from the discussion forums and use the



information stored in the AIML files. However, although this is not complicated, it presupposes basic programming and configuration skills. In addition, due to the nature of the structure of discussions with a chatbot, questions on the same subject appear in multiple ways, including possible spelling mistakes. Inserting all possibilities is not only a time-consuming but also a mundane job. A solution is to automate ways of creating utterances on the same answer. In conclusion, current technology allows minimum options to use both informational and intentional levels among consecutive discourse levels. More research is needed on chatbot technology and discourse structure in natural language processing to enable engagement and immersion in intentional learning dialogues.



References

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