Announcing the Final Examination of Awrad Mohammed Ali for the degree of Doctor of Philosophy

Time & Location: February 26, 2019 at 1:30 PM in HEC 101A
Title: MACHINE LEARNING FROM CASUAL CONVERSATION

Human social learning is an effective process that has inspired many existing machine learning techniques, such as learning from observation and learning by demonstration. In this dissertation, we introduce another form of social learning, Learning from a Casual Conversation (LCC). LCC is an open-ended machine learning system in which an artificially intelligent agent learns from an extended dialog with a human. Our system enables the agent to incorporate new changes into its knowledge base, based on the human conversing's text input. This system emulates how humans learn from each other. LCC closes the gap in the current research that is focused more on teaching specific tasks to computer agents. Furthermore, LCC aims to provide an easy way to improve the knowledge of the system without requiring the involvement of a programmer. This system does not restrict the user to enter specific information; instead, the user can chat naturally with the agent. LCC identifies the inputs that contain information related to its knowledge base in the learning process. LCC's architecture consists of multiple sub-systems combined together to perform the task. Its learning component can add new knowledge to existing information in the knowledge base, confirm existing information, and/or update existing information found to be similar to the user input. The test results indicate that the prototype was successful in learning from a conversation.

The LCC system functionality was assessed using different evaluation methods. This includes tests performed by the developer, as well as others by 130 human test subjects. Thirty of those test subjects interacted directly with the system and completed a survey of 13 questions/statements that asked the user about his/her experience using LCC. A second group of 100 human test subjects evaluated the dialogue logs of a subset of the first group of human testers. The collected results were all found to be acceptable and within the range of our expectations.

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Approved for distribution by Avelino J. Gonzalez, Committee Chair, on February 8, 2019.

The public is welcome to attend.