Notice of the Final Oral Examination
for the Degree of Master of Science

of

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BSc (Gandhi Institute of Technology and Management, 2012)

“Towards a Deeper Understanding of Current Conversational Frameworks through the Design and Development of a Cognitive Agent”

Department of Computer Science

Wednesday, November 7, 2018
11:00 A.M.
Engineering and Computer Science Building
Room 468

Supervisory Committee:
Dr. Hausi Müller, Department of Computer Science, University of Victoria (Co-Supervisor)
Dr. Ulrike Stege, Department of Computer Science, UVic (Co-Supervisor)

External Examiner:
Dr. Colin Bradley, Department of Mechanical Engineering, Uvic

Chair of Oral Examination:
Dr. Laurence Coogan, School of Earth and Ocean Sciences, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies
Abstract

In this exciting era of cognitive computing, conversational agents have a promising utility and are the subject of this thesis. Conversational agents aim to offer an alternative to traditional methods for humans to engage with technology. This can mean to reduce human effort to complete a task using reasoning capabilities and by exploiting context, or allow voice interaction when traditional methods are not available or inconvenient. This thesis explores technologies that power conversational applications such as virtual assistants, chatbots and conversational agents to gain a deeper understanding of the frameworks used to build them.

This thesis introduces FOODIE, a conversational kitchen assistant built using IBM Watson technology. The aim of Foodie is to assist families in improving their eating habits through recipe recommendations taking into account personal context, such as allergies and dietary goals, while helping reduce food waste and managing grocery budgets. This thesis discusses FOODIE’s architecture, and derives a design methodology for building conversational agents.

This thesis explores context-aware systems and their representation in conversational applications. Through Foodie, we characterize the contextual data and define its methods of interaction with the application.

FOODIE reasons using IBM Watson’s conversational services to recognize users’ intents and understand events related to the users and their context. This thesis discusses our experiences in building conversational agents with Watson, including features that may improve the development experience for creating rich conversations.