

Alfredo Gabaldon, Ph.D., Senior Scientist, GE Research

Role/Expertise: Knowledge Representation and Reasoning

Citizenship: US Permanent Resident

Clearances: None

Education: Ph.D. in Computer Science, University of Toronto
M.S. in Computer Science, University of Texas at El Paso
B.S. in Computer Science, University of Texas at El Paso

Relevant Experience: Dr. Alfredo Gabaldon is a Senior Scientist at GE Research. His research interests lie in the general area of Artificial Intelligence, with particularly interested in developing systems that utilize knowledge and reasoning to solve challenging problems in applied areas such as Intelligent Assistants, Cognitive Robotics, Automated Planning, Situation Awareness, and Dialogue Understanding and Generation, among others. During the last few years, at GE, he has worked on various projects applying semantic technologies in systems that use domain knowledge to assist human users to perform complex cognitive tasks in a more efficient way with better results. He was a PI in the DARPA Automating Scientific Knowledge Extraction (ASKE) program and is currently involved in the DARPA CREATE program. Other past projects include: development of Mia---an intelligent assistant that learns by observing software platform users; DHS funded work on cyber-security that uses knowledge graphs to reason about systems and potential attackers; Australian DoD funded work on situation awareness that processes and analyzes data from multiple sources and produces alerts in human-understandable form; and ONR funded work on understanding dialogues about joint activities by incrementally constructing candidate explanations of the dialogue in terms of background knowledge and observed speech acts.

Relevant Publications and Patents:

1. Gabaldon, A. and Kumar, N.C. *Knowledge-driven Model Assembly and Execution*. Modeling the World's Systems Conference, Washington D.C., 2019.
2. Gabaldon, A. and Kumar, N.C. Knowledge-driven automated scientific model extraction, explanations, and hypothesis generation. U.S. Patent Application 16/791654, 2019.
3. Gustafson, S., Aggour, K., Cuddihy, P., Gabaldon, A., McHugh, J., Tari, L. Methods and systems for capturing analytic model authoring knowledge, U.S. Patent Application 15/347887, 2016.
4. Feddersen, B., Keefe, K., Sanders, W.H., Muehrcke, C., Parks, D., Crapo, A., Gabaldon, A., Palla, R. An ontological model for constructing mobius advise security models. *45th Annual IEEE/IFIP International Conference on Dependable Systems and Networks*, 2015.
5. Baader, F., Bauer, A., Baumgartner, P., Cregan, A., Gabaldon, A., Ji, C., Lee, K., Rajaratnam, D. and Schwitter, R. A novel architecture for situation awareness systems. *18th International Conference on Automated Reasoning with Analytic Tableaux and Related Methods (TABLEAUX 2009)*, vol. 5607 of LNAI, pp. 77-92. Springer, 2009.
6. Gabaldon, A., Langley, P., Meadows, B. Integrating meta-level and domain-level knowledge for task-oriented dialogue. *Advances in Cognitive Systems*, 3:201-219, 2014.