Nina Gierasimczuk - DTU Orbit (01/01/2018)

Nina Gierasimczuk

Organisations

Assistant Professor, Department of Applied Mathematics and Computer Science
19/05/2015 → present
nigi@dtu.dk
VIP

Algorithms and Logic
21/12/2015 → present
VIP

Publications:

Learning to Act: Qualitative Learning of Deterministic Action Models
In this article we study learnability of fully observable, universally applicable action models of dynamic epistemic logic. We introduce a framework for actions seen as sets of transitions between propositional states and we relate them to their dynamic epistemic logic representations as action models. We introduce and discuss a wide range of properties of actions and action models and relate them via correspondence results. We check two basic learnability criteria for action models: finite identifiability (conclusively inferring the appropriate action model in finite time) and identifiability in the limit (inconclusive convergence to the right action model). We show that deterministic actions are finitely identifiable, while arbitrary (non-deterministic) actions require more learning power—they are identifiable in the limit. We then move on to a particular learning method, i.e. learning via update, which proceeds via restriction of a space of events within a learning-specific action model. We show how this method can be adapted to learn conditional and unconditional deterministic action models. We propose update learning mechanisms for the afore mentioned classes of actions and analyse their computational complexity. Finally, we study a parametrized learning method which makes use of the upper bound on the number of propositions relevant for a given learning scenario. We conclude with describing related work and numerous directions of further work.

General information
State: Accepted/In press
Organisations: Department of Applied Mathematics and Computer Science , Algorithms and Logic
Authors: Bolander, T. (Intern), Gierasimczuk, N. (Intern)
Number of pages: 29
Publication date: 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Logic and Computation
Article number: exx036
ISSN (Print): 0955-792X
Ratings:
BFI (2018): BFI-level 2
BFI (2017): BFI-level 2
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 0.74 SJR 0.396 SNIP 0.928
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.402 SNIP 0.774 CiteScore 0.54
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.537 SNIP 0.875 CiteScore 0.75
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.57 SNIP 1.233 CiteScore 0.95
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.863 SNIP 1.9 CiteScore 1.23
ISI indexed (2012): ISI indexed yes
Learning Actions Models: Qualitative Approach

In dynamic epistemic logic, actions are described using action models. In this paper we introduce a framework for studying learnability of action models from observations. We present first results concerning propositional action models. First we check two basic learnability criteria: finite identifiability (conclusively inferring the appropriate action model in finite time) and identifiability in the limit (inconclusive convergence to the right action model). We show that deterministic actions are finitely identifiable, while non-deterministic actions require more learning power—they are identifiable in the limit. We then move on to a particular learning method, which proceeds via restriction of a space of events within a learning-specific action model. This way of learning closely resembles the well-known update method from dynamic epistemic logic. We introduce several different learning methods suited for finite identifiability of particular types of deterministic actions.

General information

State: Published
Organisations: Department of Applied Mathematics and Computer Science, Algorithms and Logic, University of Amsterdam
Authors: Bolander, T. (Intern), Gierasimczuk, N. (Intern)
Pages: 40-52
Publication date: 2015

Host publication information

Title of host publication: Proceedings of the 5th International Workshop on Logic, Rationality, and Interaction (LORI 2015)
Publisher: Springer
Editors: van der Hoek, W., Holliday, W. H., Wang, W.
ISBN (Print): 978-3-662-48560-6
ISBN (Electronic): 978-3-662-48561-3

Series: Lecture Notes in Computer Science
Volume: 9394
ISSN: 0302-9743
BFI conference series: Logic, Rationality, and Interaction (5010128)
Main Research Area: Technical/natural sciences
Conference: 5th International Workshop on Logic, Rationality, and Interaction (LORI 2015), Taipei, Taiwan, Province of China, 28/10/2015 - 28/10/2015
Projects:

**Action Model Learning for Multi-agent Systems**

Department of Applied Mathematics and Computer Science  
Period: 01/02/2017 → 31/01/2020  
Number of participants: 3  
Phd Student: Occhipinti Liberman, Andrés (Intern)  
Supervisor: Gierasimczuk, Nina (Intern)  
Main Supervisor: Bolander, Thomas (Intern)

**Financing sources**  
Source: Internal funding (public)  
Name of research programme: Institut stipendie (DTU)  
Project: PhD