

Towards framed autonomy

Professor Giuseppe De Giacomo

*Professor of Computer Science
University of Oxford*

Monday 13 November 2023

1300hrs

LR7, IEB

Abstract:

Autonomy is one of the grand objectives of AI. It aims at empowering AI systems with the ability to deliberate how to act in the world autonomously without being preprogrammed to do so. Empowering an AI system with the ability to self-deliberate its own behaviour carries significant risks, and regulating the autonomy of AI systems is a crucial challenge for future AI.

One interesting concept in this context is that of "framed autonomy", a term recently introduced in an AI-Augmented Business Process Management Manifesto, that indicates that the system is allowed to behave with maximally permissive freedom within the boundaries of its current "frame". This concept is related to reactive synthesis in Formal Methods, supervisory control in Discrete-Event Systems, and the characterization of "capabilities" (knowing-how) in Reasoning about Action, Goal Reasoning, and Theory of Mind. In this talk, we will concretely look at framed autonomy through the lens of Linear Temporal Logics on finite traces and DFA-based synthesis, linking it to winning regions in games on graphs, nondeterministic strategies, and characterization of the set of winning strategies.