

# Invited Talk: Formal Aspects of Strategic Reasoning

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## Abstract

Strategic reasoning is essential in numerous fields, including game theory, artificial intelligence, economics, and cybersecurity, as it involves devising and analyzing strategies to achieve goals in both competitive and cooperative settings. This talk will explore the formal aspects of strategic reasoning, focusing on the mathematical and logical underpinnings that enable precise and effective strategy formulation. Key model frameworks, such as Alternating-time Temporal Logic (ATL) and Strategy Logic, one of the most powerful logic for strategic reasoning, will be discussed to illustrate their roles in understanding and predicting strategic interactions.

## Keywords

Knowledge Representation and Reasoning, Formal Methods, Strategy Logics, Strategic Reasoning, Reactive Synthesis

## 1. Author Biography

Aniello Murano is a Full Professor in Computer Science and Artificial Intelligence at the Department of Electrical Engineering and Information Technology of the University of Naples Federico II. He is an EurAI Fellow and an AAIA Fellow. He joined the University Federico II in 2005 as a Researcher and was promoted to Professor in 2010. He earned a Laurea degree (summa cum laude) in Computer Science in 1997 and a PhD in Computer Science in 2003 (with honors) from the University of Salerno. His PhD studies included a one year at Rice University in Houston, where he worked under the supervision of Moshe Y. Vardi. From 2002 to 2005, he was research fellow, at the University of Salerno and the Hebrew University of Jerusalem, working with Orna Kupferman.

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