

# Luca Di Stefano

Curriculum vitae  
August 2021

## Personal information

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**E-mail:** luca.di-stefano@inria.fr

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## Research interests

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My research mainly concerns the formal modelling and analysis of multi-agent and collective systems. This entails, on one hand, the development of formally defined high-level languages to concisely describe the features of individual agents, and on the other hand the application of state-of-the-art verification techniques to check the collective behaviour of the system. Keywords associated with my interests include:

**Modelling:** Multi-agent systems, collective adaptive systems, Agent-based modelling, Stigmergic interaction, Process algebras, Structural operational semantics, Attribute-based communication, Domain-specific languages.

**Analysis:** Explicit-state and symbolic model checking, Bounded model checking, Temporal logics, Software verification.

## Education

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**Gran Sasso Science Institute**

**L'Aquila, Italy**

*PhD in Computer Science*

*November 2016 – October 2020*

**Thesis:** *Modelling and Verification of Multi-Agent Systems via Sequential Emulation*

**Advisors:** Rocco De Nicola, Omar Inverso

**URL:** [hdl.handle.net/20.500.12571/10181](http://hdl.handle.net/20.500.12571/10181)

**Other activities:** Student representative in the academic senate (2018–2020).

**University of L'Aquila**

**L'Aquila, Italy**

*MSc in Computer Science and Systems Engineering<sup>1</sup>*

*March 2014 – October 2016*

**Thesis:** *Design of a reactive system for autonomous UAV navigation in unknown environments<sup>2</sup>*

**Advisors:** Eliseo Clementini, Enrico Stagnini

**Final grade:** 110/110, *cum laude*

## Experience

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**CONVECS, Inria/LIG**

**Grenoble, France**

*Post-doctoral researcher*

*November 2020 – Present time*

- Model checking temporal properties of collective adaptive systems;
- Compositional verification of multi-agent systems.

**IMT Lucca**

**Lucca, Italy**

*Grant holder*

*December 2019 – October 2020*

Research grant on “Verification of Emerging Properties in Collective Adaptive Systems”, awarded by the SysMA research unit.

**CONVECS, Inria/LIG**

**Grenoble, France**

*Visiting PhD student*

*March – July 2019*

- Encoding of multi-agent systems in the LNT specification language;
- Verification of multi-agent systems through model checking.

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<sup>1</sup>Official degree name: *Ingegneria Informatica e Automatica*.

<sup>2</sup>Original title: *Progettazione di un sistema reattivo per la navigazione autonoma di un drone in ambienti sconosciuti*.

## Teaching

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### Modelling and Verification

Polytech Paris-Saclay

Paris, France

April – May 2021

36-hour course for Master students in Computer Science Engineering, *filière apprentissage*. Held remotely as a supply teacher (*intervenant vacataire*).

- Concurrent systems. Communicating automata. Behavioural equivalences.
- Real-time systems. Timed automata.
- Process algebras: CCS, LNT.
- Modal and temporal logics: HML,  $\mu$ -calculus, MCL. Model checking.
- Model-based testing. Input-output conformance. Test case generation.

## Other academic activities

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### Reviewing activity

Invited as reviewer or sub-reviewer for the following conferences:

- International Conference on Autonomous Agents and Multiagent Systems (AAMAS)
- International Symposium on Formal Methods (FM)
- International Conference on Software Technologies (ICSOT)
- International Conference on Software Engineering and Formal Methods (SEFM)
- Theoretical Aspects of Software Engineering Conference (TASE)

### Participation to PhD schools

#### 1st VMCAI Winter School

Lisbon, Portugal

January 2019

- Computing with SAT oracles;
- Abstract interpretation;
- Modeling and verification of distributed protocols.

## Publications

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### Journal articles

Rocco De Nicola, Luca Di Stefano, and Omar Inverso. 2020. “Multi-Agent Systems with Virtual Stigmergy”. In: *Sci. Comput. Program.* 187.

Rocco De Nicola, Luca Di Stefano, and Omar Inverso. 2018. “Toward Formal Models and Languages for Verifiable Multi-Robot Systems”. In: *Front. Robot. AI* 5.

### Peer-reviewed conference papers

Luca Di Stefano and Frédéric Lang. 2021. “Verifying temporal properties of stigmergic collective systems using CADP”. In: *ISoLA*. To appear.

Luca Di Stefano, Frédéric Lang, and Wendelin Serwe. 2020. “Combining SLiVER with CADP to Analyze Multi-agent Systems”. In: *COORDINATION*.

Rocco De Nicola, Luca Di Stefano, and Omar Inverso. 2018. “Multi-Agent Systems with Virtual Stigmergy”. In: *STAF Workshops*.

### Citation indices

Accessed on Scopus on August 13, 2021.

Citations: 15

*h*-index: 3