Leonardo Picchiami

ESPERIENZA LAVORATIVA

UNIVERSITÀ DEGLI STUDI DI ROMA "LA SAPIENZA" – ROMA, ITALIA
RICERCATORE POSTDOC – 01/11/2024 – ATTUALE

Tematiche:
- Simulation-based design and verification of Critical Systems based on Digital Twins.
- Simulation-based intelligent algorithms based on Statistical Model Checking and Black-Box Optimization.
- Simulation techniques for dynamical systems based on HPC (High-Performance Computing) methodologies.
- Data-driven intelligent algorithms for personalization of the hemodialysis therapy.

UNIVERSITÀ DEGLI STUDI DI ROMA "LA SAPIENZA" – ROMA, ITALIA
DOTTORANDO, XXXVII – 01/11/2021 – 31/05/2025

Tematiche:
- Simulation-based design and verification of Critical Systems based on Digital Twins.
- Simulation-based intelligent algorithms based on Statistical Model Checking and Black-Box Optimization.
- Simulation techniques for dynamical systems based on HPC (High-Performance Computing) methodologies.

Advisor: Enrico Tronci.

Descrizione:

La mia ricerca si basa sullo sviluppo di metodi innovativi per la verifica e progettazione di *sistemi critici* dove fallimenti ed errori del sistema potrebbero avere un impatto drastico in termini economici o di vite umane. Nello specifico, lo sviluppo di algoritmi intelligenti che sfruttano Digital Twins, Statistical Model Checking e Black-Box Optimization per la verifica e progettazione di tali sistemi è tra le tematiche centrali della mia ricerca. Tipicamente questo comprende modelli il cui comportamento può essere valutato solo tramite simulazioni estremamente complesse che richiede la progettazione e realizzazione di software per calcolo altamente parallelo che su infrastrutture di calcolo distribuite. Campi applicativi comprendono processi industriali, sistemi cyber-fisici industriali e sistemi biologici.

ITS ICT ACCADEMY – ROMA, ITALIA
DOCENTE – 15/04/2024 – ATTUALE

Corsi:

- Fondamenti di programmazione in Python
- Sistemi operativi e reti

ISTRUZIONE E FORMAZIONE

01/11/2021 – 16/09/2025 Roma, Italia
DOTTORATO DI RICERCA IN COMPUTER SCIENCE UNIVERSITÀ DEGLI STUDI DI ROMA "LA SAPIENZA"

Voto finale Ottimo │ **Tesi** Methods and tools for design and verification of Intelligent Systems

12/2018 – 03/2021 Roma, Italia
LAUREA MAGISTRALE IN COMPUTER SCIENCE Università degli studi di Roma "La Sapienza"

Voto finale 110/110 con lode │ **Tesi** Optimisation of combination treatments through AI-driven black-box search algorithms

09/2014 – 12/2018 Roma, Italia
LAUREA TRIENNALE IN INFORMATICA Università degli studi di Roma "La Sapienza"

Voto finale 98/110 │ **Tesi** Automatic Synthesis of Stabilizing Controllers for Discrete Time Linear Hybrid Systems

COMPETENZE LINGUISTICHE

Lingua madre: **ITALIANA**

Altre lingue:

	COMPRENSIONE		ESPRESSIONE ORALE		SCRITTURA
	Ascolto	Lettura	Produzione orale	Interazione orale	
INGLESE	B2	B2	B2	B2	B2

Livelli: A1 e A2: Livello elementare B1 e B2: Livello intermedio C1 e C2: Livello avanzato

PUBBLICAZIONI

2025
Simulation-Based Design of Industry-Size Control Systems With Formal Quality Guarantees

Marco Esposito, Alberto Leva, Toni Mancini, Leonardo Picchiami, and Enrico Tronci. "Simulation-Based Design of Industry-Size Control Systems With Formal Quality Guarantees." *IEEE Transactions on Industrial Informatics* (2025).

2025
Scaling Up Statistical Model Checking of Cyber-Physical Systems via Algorithm Ensemble and Parallel Simulations over HPC Infrastructures

Leonardo Picchiami, Maxime Parmentier, Axel Legay, Toni Mancini, and Enrico Tronci. "Scaling up statistical model checking of cyber-physical systems via algorithm ensemble and parallel simulations over HPC infrastructures." *Journal of Systems and Software* 219 (2025): 112238.

2024
On Optimizing Simulation-Based Verification of Cyber-Physical Systems via Statistical Model Checking: a Preliminary Work

Leonardo, Picchiami. "On Optimizing Simulation-Based Verification of Cyber-Physical Systems via Statistical Model Checking: a Preliminary Work." *Artificial Intelligence and Formal Verification, Logic, Automata, and Synthesis* (2024): 13-21.

2022
Formal Certification of Surrogate Models for Cyber-Physical Systems Verification

Esposito, Marco, and Leonardo Picchiami. "Formal Certification of Surrogate Models for Cyber-Physical Systems Verification." *OVERLAY@ AI* IA*. 2022.

2022
Estimation-Based Verification of Cyber-Physical Systems via Statistical Model Checking

Esposito, Marco, and Leonardo Picchiami. "Estimation-Based Verification of Cyber-Physical Systems via Statistical Model Checking." *HYDRA/RCRA@ LPNMR*. 2022

2021
A comparative study of AI search methods for personalised cancer therapy synthesis in copasi

Esposito, Marco, and Leonardo Picchiami. "A comparative study of AI search methods for personalised cancer therapy synthesis in copasi." *International Conference of the Italian Association for Artificial Intelligence*. Cham: Springer International Publishing, 2021.

2021
Automatic Synthesis of Stabilizing Controllers for Discrete Time Linear Hybrid Systems

Picchiami, Leonardo. "Automatic Synthesis of Stabilizing Controllers for Discrete Time Linear Hybrid Systems." *IPS-RCRA@ AI* IA*. 2021.

2021
Intelligent Search for Personalized Cancer Therapy Synthesis: an Experimental Comparison

Esposito, Marco, and Leonardo Picchiami. "Intelligent Search for Personalized Cancer Therapy Synthesis: an Experimental Comparison." *IPS-RCRA@ AI* IA*. 2021

2021
Simulation-Based Synthesis of Personalised Therapies for Colorectal Cancer

Esposito, Marco, and Leonardo Picchiami. "Simulation-Based Synthesis of Personalised Therapies for Colorectal Cancer." *OVERLAY@ GandALF*. 2021.

PROGETTI

01/11/2022 – 31/10/2023
Avvio alla ricerca - Sapienza

Titolo: Formal Verification of Cloud-Based Cyber-Physical Systems through Statistical Model Checking

Importo finanziato: 1166 €

ORGANIZZAZIONE EVENTI SCIENTIFICI

11/12/2025 – 12/12/2025
3rd International Conference on Decision Making in Medicine and Law Opportunities and pitfalls of information technologies

DMM&L 2025 - Roma, Italia

Local organising committee & publicity and fundraising committee.

Link

18/09/2025 – 19/09/2025
10th Italian Workshop on Embedded Systems

IWES 2025 - Modena, Italia

Publicity and fundraising committee

Link

07/11/2024 – 08/11/2024
2nd International Conference on Decision Making in Medicine and Law Opportunities and pitfalls of information technologies

DDM&L 2024 - Braga, Portogallo.

Local organising committee & publicity and fundraising committee.

Link

19/07/2024 – 20/07/2024
9th Italian Workshop on Embedded Systems

IWES 2024 - Catania, Italia

Publicity and fundraising committee

Link

09/12/2021 – 10/12/2021
6th Italian Workshop on Embedded Systems

IWES 2021 - Roma, Italia

Local organising committee

[Link](#)

- **CORSI DI FORMAZIONE POST-LAUREAM**

15/07/2024 – 26/07/2024
2st European Summer School on Artificial Intelligence & 21th Advanced Course on Artificial Intelligence

ESSAI&ACAI 2024 - Atene, Grecia

28/08/2023 – 01/09/2023
44th International Summer School of Automatic Control. Safety and Reachability analysis for dynamical systems

EEAUTO 2023 - Grenoble, Francia

01/08/2023 – 12/08/2023
Summer School Marktoberdorf 2023. Safety and Security through Formal Verification

MOD2023 - Marktoberdorf, Germania

24/07/2023 – 28/07/2023
1st European Summer School on Artificial Intelligence & 20th Advanced Course on Artificial Intelligence

ESSAI&ACAI 2023 - Ljubljana, Slovenia

12/06/2023 – 16/06/2023
High Performance Computing Summer School

HPC2023 - Pavia, Italia

19/09/2022 – 23/09/2022
CPS Summer School. Designing Cyber-Physical Systems: From concepts to implementation

CPS22 - Pula, Italia

30/05/2022 – 05/06/2022
Eleventh Summer School on Formal Techniques

SFT22 - Menlo Park, United States

- **CONFERENZE - SCIENTIFIC COMMITTEE**

25/08/2025 – 30/08/2025
QEST + FORMATS 2025

Artifact Evaluation Committee

[Link](#)