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# CURRICULUM VITAE

Per la destinazione ai fini della pubblicazione in ottemperanza al D. Lgs. 33/2013

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## Francesco Simone

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### ACADEMIC ROLES

- 11/2021 – 10/2024 **Ph.D. Candidate** in Industrial and Management Engineering, at Sapienza University of Rome, Faculty of Civil and Industrial Engineering, Department of Mechanical and Aerospace Engineering
- 07/2021 – 09/2021 **Research Assistant**, at Sapienza University of Rome, Faculty of Civil and Industrial Engineering, Department of Mechanical and Aerospace Engineering. On a project entitled “Support for data modeling and artificial intelligence algorithms applied to logistics processes”

### EDUCATION

- 2018 - 2020 **MSc in Mechanical Engineering – Industrial Production** (110/110) at Sapienza University of Rome, Italy
- 2014 - 2017 **BSc in Mechanical Engineering** (92/110) at Sapienza University of Rome, Italy

### TEACHING ACTIVITIES

- 11/2021 - Ongoing **Teaching assistant** at Sapienza University of Rome, Italy, for the courses of: “Operations Management” (in English and in Italian), “Industrial Plants” (in Italian), and “Quality Management” (in Italian); at the Faculty of Civil and Industrial Engineering for the MSc and BSc in Mechanical Engineering
- 11/2021 - Ongoing **Teaching assistant** at Sapienza University of Rome, Italy, for the courses “Operations Management” (in English and in Italian), “Industrial Plants” (in Italian), “Quality Management” (in Italian), and “Smart Factory” (in Italian); at the Faculty of Information Engineering, Informatics, and Statistics for the MSc and BSc in Management Engineering
- 12/2022 – 02/2023 **Adjunct tutor** at Sapienza University of Rome, Italy, for the course “Business Models and Tools for Entrepreneurship” (in Italian) at the Faculty of Information Engineering, Informatics, and Statistics for the MSc in Management Engineering

### PROFESSIONAL EXPERIENCES

- 09/2023 – Ongoing **Specialized consultant for quantitative and documentary analyses** at Sapienza University of Rome, Italy  
Support the activities of the research team of the RE-SET project funded under the BRIC 2022 funding scheme.
- 07/2023 – 07/2023 **Business models analyst** at Sapienza University of Rome, Italy  
Analysis and evaluation of business models for new entrepreneurial initiatives.
- 11/2022 – 12/2022 **Risk assessment analyst** at aiComply s.r.l., Italy  
Support an Air Navigation Service Providers in performing the risk assessment for new developments in airport design.
- 01/2022 – 04/2022 **Business Intelligence analyst** at Sapienza University of Rome, Italy  
Design and implementation of Business Intelligence report to create an interactive platform to support strategic decision making for a pharma enterprise for an activity named “Predisposizione di modelli di analisi tramite strumenti di Business Intelligence, attraverso la realizzazione di data model, ETL e relative visual” at University of Rome “La Sapienza”.
- 03/2019 – 06/2019 **Business consultant** at Wuerth Phoenix s.r.l., Italy  
ERP systems consultant for production environments with a focus on production control data management and visualization, and operations scheduling and planning.

## PROJECTS

### **Responsible**

11/2023 – Ongoing **Hardware-in-the-loop simulations to assess cyber resilience in critical industrial plants**

The project aims to investigate the use of Human-in-the-Loop simulations to measure cyber resilience in the context of industrial plants related to critical infrastructures.

### **Research team member/associate**

09/2023 – Ongoing **RESIST (RESilience management to Industrial Systems Threats)**, collaboration between Department of Mechanical and Aerospace Engineering (Sapienza University of Rome), University of Bologna, and University Politecnica delle Marche

Research project funded under the Research Projects of National Interest (PRIN) 2022 programme. The project aims to develop a Digital Twin simulation environment for assessing the resilience of industrial socio-technical plants against cyber-attacks. During the project, a simulation methodology to explore Cyber-Socio-Technical Systems (CSTS) resilience will be developed. Beyond the methodological development, a validation in a real-world plant will offer recommendations for adapting the methodology to diverse industrial domains.

05/2023 – Ongoing **RE-SET (Resilience Engineering for Safe Energy Transition)**, collaboration between Department of Mechanical and Aerospace Engineering (Sapienza University of Rome), INAIL, and University of Messina

Research funded under the INAIL-BRIC 2022 (Call for Collaborative Research) programme "Integrated and Resilient Safety Management of Workers, Materials and Installations for Seveso Plants in the Energy Transition". The project involves the development of analysis and evaluation tools to assist companies in the Seveso sector in the energy transition, identifying intervention priorities and improvement actions. This aim will be realized through the System-Theoretic Accident Model and Process (STAMP) technique, then converted into a Knowledge Graph, in turn fed and validated by empirical results obtained through laboratory tests.

05/2024 – Ongoing **Analysis of production system layout for Istituto Poligrafico e Zecca dello Stato s.p.a.** collaboration between Istituto Poligrafico e Zecca dello Stato s.p.a. and Department of Mechanical and Aerospace Engineering (Sapienza University of Rome)

Research involving the analysis of the layout of the production system, and the revision of a project meant to merge production lines of Zecca and Officina Carte Valori towards the Polo Salario production site.

10/2023 – Ongoing **AI4ES (Artificial Intelligence for Emergencies Services)**, collaboration between ISED s.p.a., Geosystems s.r.l., and Department of Mechanical and Aerospace Engineering (Sapienza University of Rome)

Research funded under the Regional Programme FESR Lazio 2021-2027, Ambito 4, Modello 1 "RIPOSIZIONAMENTO COMPETITIVO RSI". The project aims to develop a decision support tool based on Artificial Intelligence to assist the management of logistics in medical emergency-urgency scenarios, and, in turn, the management and resolution of requests for assistance.

11/2023 – 02/2024 **Reconfiguration of internal logistic and warehouse design for A.S. Roma**, collaboration between Department of Mechanical and Aerospace Engineering (Sapienza University of Rome) and A.S. Roma

Evaluate different solutions for the internal logistic of A.S. Roma retail. The project consisted in updating the warehouses' design and perform the related analysis of costs to support the business in the best choice for logistic management.

11/2022 – 12/2022 **Risk assessment for new airport design**, collaboration between Department of Mechanical and Aerospace Engineering (Sapienza University of Rome) and aiComply s.r.l.

Perform the risk assessment for the design phase of a new control tower at airport to support the Air Navigation Service Provider in the implementation of changes.

01/2022 – 04/2022 **Business Intelligence and Business Analytics for product and organization management**, collaboration between Department of Mechanical and Aerospace Engineering (Sapienza University of Rome) and aiComply s.r.l.

Design and implementation of Business Intelligence interactive dashboards to support decision making by the top management of a pharmaceutical company.

09/2021 - 10/2021 **Business Intelligence reporting and dashboards design for 15th Conference on Naturalistic Decision Making and 9th Symposium on Resilience Engineering**, collaboration between Department of Mechanical and Aerospace Engineering (Sapienza University of Rome) and Resilience Engineering Association (REA)

Design and development of Business Intelligence dashboards and reports to explore and to disseminate data from the 15th Conference on Naturalistic Decision Making and 9th Symposium on Resilience Engineering organized by REA. The report is freely available at: <https://www.resilience-engineering-association.org/symposium/>

04/2021 - 09/2021 **Key Performance Indicator analysis and Business Intelligence reporting for aerodrome weather forecasting**, collaboration between Department of Mechanical and Aerospace Engineering (Sapienza University of Rome) and aiComply s.r.l.

Design and implementation of a platform to perform analysis on weather forecasting accuracy and support Air Navigation Service Providers in guaranteeing correct and safe aerodrome management. Design and implementation of advanced Business Intelligence interactive dashboards to extract knowledge from historical weather data applying ETL to properly parse information inside report strings.

## PUBLICATIONS

SCOPUS

h-index: 4

Documents: 13

Total citations: 50

Google Scholar

h-index: 5

Documents: 23

Total citations: 75

### International journals (6) \*

1. Patriarca R., **Simone F.**, Artime O., Saurin T. A., Fogliatto F. S. (2024) *Conceptualization of a Functional Random Walker for the analysis of socio-technical systems*, Reliability Engineering and System Safety
2. **Simone F.**, Ansaldo S.M., Agnello P., Di Gravio G., Patriarca R., (2023). *Knowledge in graphs: investigating the completeness of industrial near miss reports*, Safety Science
3. **Simone F.**, Nakhil Akel A. J., Di Gravio G., Patriarca R. (2023), *Thinking in systems, sifting through simulations: a way ahead for cyber resilience assessment*, IEEE Access
4. **Simone F.**, Ansaldo S.M., Agnello P., Patriarca R. (2023), *Industrial safety management in the digital era: constructing a knowledge graph from near misses*, Computers in Industry
5. Patriarca R., **Simone F.**, Di Gravio G. (2023), *Supporting weather forecasting performance management at aerodromes through anomaly detection and hierarchical clustering*, Expert Systems with Applications
6. Patriarca R., **Simone F.**, Di Gravio G. (2022), *Modelling cyber resilience in a water treatment and distribution system*, Reliability Engineering and System Safety

\*Additionally, the following manuscripts are currently under review:

Patriarca R., Lovaglio L., **Simone F.** (2024). *Functional resonance analysis via a genetic algorithm to ensure cost-effective maintenance planning*, International Journal of Production Economics

### International conference proceedings (16) \*

1. Nakhil Akel A. J., **Simone F.**, Stefana E., Fedele L., Patriarca R., (2024). *System-theoretic analysis for the identification of emerging risk in Cyber-Physical systems*. International Conference on Industry 4.0 and Smart Manufacturing (ISM 2024). 13-15 November 2024 Prague, Czech Republic (to be held)
2. Nakhil Akel A. J., **Simone F.**, Stefana E., Patriarca R. (2024) *Knowledge graphs to convert large Safety Control Structures of modern industrial establishments*, European STAMP Workshop and Conference ESWC 2024, 2-4 October 2024 – Alexandroupolis, Greece – extended abstract
3. **Simone F.**, Nakhil Akel A. J., Lombardi M., Di Gravio G., Patriarca R. (2024) *Human-Hardware In the Loop (HHIL) STAMP-based simulations to model cyber-physical complexity in experimental high-risk plants*, European STAMP Workshop and Conference ESWC 2024, 2-4 October 2024 – Alexandroupolis, Greece – extended abstract
4. Nakhil Akel A. J., **Simone F.**, Lombardi M., Costantino F., Di Gravio G., Tronci M., Bortolini M., Mazzuto G., Patriarca R., (2024). *Dealing with I5.0 complexity: cyber-socio-technical systems modelling and analysis*. XXIX SUMMER SCHOOL “Francesco Turco” – Industrial Systems Engineering. 11-13 September 2024 Otranto, Italy.
5. **Simone F.**, Artime O., Saurin T. A., Fogliatto F. S., Patriarca R. (2024). *Walking “randomly”: how to tract intractable FRAM models*. FRAMily-2024 & Safety-II in practice Workshops 2024 – Book of Abstracts, 3 – 7 June 2024, Lund, Sweden – extended abstract
6. Nakhil Akel A. J., **Simone F.**, Stefana E., Di Gravio G., Patriarca R., (2023). *System theoretic model checking for safety management in industrial plants*. Proceedings of XXVIII Summer School “Francesco Turco”: “Blue, Resilient & Sustainable Supply Chain: the Role of Industrial Plants in Procurement, Production and Distribution”, 6-8 September 2023, Genova, Italy
7. **Simone F.**, Nakhil Akel A. J., Alvino A., Ansaldo S. M., Agnello P., Milazzo M. F., Di Gravio G., Patriarca R., (2023). *Extending safety control structures: a knowledge graph for STAMP*, Proceedings of 33th European Safety and Reliability Conference (ESREL 2023). 03 - 08 September 2023, Southampton, United Kingdom
8. Patriarca R., **Simone F.** (2023) *A graph with a thousand edges: rummaging in complex work varieties*, 10th Symposium on Resilience Engineering (REA Symposium 2023). 26 - 30 June 2023, Sophia Antipolis, France – extended abstract
9. **Simone F.**, Di Gravio G., Patriarca R., Bortolini M., Galizia F.G., Gamberi M., (2023). *Managing industrial automation: How knowledge graphs can boost production*, Proceedings of CARV-MCPC 2023, 19-24 June 2023 Bologna, Italy

10. **Simone F.**, Cilli C., Di Gravio G., Patriarca R., (2023) *A data-driven cyber resilience assessment for industrial plants*, Proceedings of WorldCist'23 - 11st World Conference on Information Systems and Technologies, 03-06 April 2023, Pisa, Italy
11. **Simone F.**, Di Gravio G., Patriarca R. (2022). *Performance-based analysis of aerodrome weather forecasts*, Proceedings of New Trends in Civil Aviation 2022, 26-27 October 2022, CIIRC CTU in Prague, Czech Republic
12. **Simone F.**, Nakhal Akel A. J., Di Gravio G., Patriarca R. (2022) *System-Theoretic Process Analysis for Security with Simulations (STPA-Sec/S): Combining STPA-Sec with simulation-based resilience assessment*, 10<sup>th</sup> European STAMP Workshop and Conference ESWC 2022, 29-30 October 2022, Gdynia, Poland – extended abstract
13. **Simone F.**, Nakhal Akel A. J., Patriarca R. (2022). *Supporting warehouse management through Machine Learning*, Proceedings of XXVII Summer School “Francesco Turco”: “Unconventional Plants: Technologies, tools and Methodologies for emerging domains”, 7-9 September 2022, Riviera dei Fiori, Italy
14. **Simone F.**, Patriarca R. (2022). *A simulation-driven cyber resilience assessment for water treatment plants*, Proceedings of 32nd European Safety and Reliability Conference (ESREL 2022). 28 August - 1 September 2022, Dublin, Ireland
15. **Simone F.**, (2021). *A Model-Based Assessment of Cyber-Resilience Evaluation for Water Purification Plants with Societal Impact*, Abstract for Poster Competition at 4th European Conference on Industrial Engineering and Operations Management (IEOM 2021). 2-5 August 2021, Rome, Italy. Online – extended abstract
16. **Simone F.**, (2021). *An Integrated Simulation Model for Water Purification and Distribution*, Abstract for Simulation Competition at 4th European Conference on Industrial Engineering and Operations Management (IEOM 2021). 2-5 August 2021, Rome, Italy. Online – extended abstract

\*Additionally, the following manuscripts are currently under review:

**Simone F.**, Nakhal Akel A.J., Stefana E., Di Gravio G., Patriarca R. (2024). *Towards dynamic safety control structures in STAMP to manage safety-critical industrial establishments*, ESREL & SRA-E 2025 (European Safety and Reliability & Society for Risk Analysis Europe conference), 15-19 June 2025, Stavanger, Norway (to be held)

Nakhal Akel A.J., **Simone F.**, Stefana E., Agnello P., Vallerotonda M. R., Ansaldi S., Alvino A., Fagnoli M., Di Gravio G., Patriarca R. (2025) *A novel representation of the Seveso III Directive to manage dangerous substances in modern industrial plants*, International Conference on Safety & Innovation, 11-13 March 2025, Rome, Italy (to be held)

#### **National journals (1)**

1. **Simone F.**, Patriarca R., Di Gravio G. (2024) *Analisi dei costi attraverso modelli parametrici*, Logistica Management n° 342, Marzo 2024

#### **National conference proceedings (2)**

1. **Simone F.**, Agnello P., Ansaldi S. M., Di Gravio G., Patriarca R., Tronci M. (2023) *Analisi della completezza dei report di quasi-incidente nella Direttiva Seveso*, SAFAP 2023. 22 - 24 November, Brescia, Italy
2. Nakhal A.J., **Simone F.**, Franzoni V., Alvino A., Ansaldi S. M., Vallerotonda M. R., Milazzo M. F., Patriarca R. (2023) *Un approccio sistemico per rappresentare la Direttiva Seveso III*, SAFAP 2023. 22 - 24 November, Brescia, Italy

#### **Others (4)**

1. Nakhal Akel A. J., **Simone F.**, Stefana E., Patriarca R. (2024) *How to navigate into the complicated world of modern industrial establishments*, NODES 2024. 7 November 2024 – online (to be held)
2. **Simone F.**, Patriarca R. (2023) *Unleashing Safety Insights: Harnessing Near Misses Through Knowledge Graphs*, NODES 2023. 26 October 2023 – online
3. Patriarca R., **Simone F.** (2023) *Studying cyber resilience in a water network: by using Simulink and MATLAB it becomes our cup of... water*, MATLAB Academic Forum Research and Teaching. 28 September 2023 – online

## **AWARDS AND RECOGNITIONS**

2024	<b>Best Research Work Award.</b> Awarded by the Conference Organizing Committee at the European STAMP Workshop and Conference ESWC 2024, held in Alexandroupolis, Greece on October 2-4, 2024, for the research work entitled “ <i>Human-Hardware In the Loop (HHIL) STAMP-based simulations to model cyber-physical complexity in experimental high-risk plants</i> ”
2023	<b>Resilience Engineering Association (REA) Young Talent.</b> Award for the best young researchers in the field of Resilience Engineering, in the Young Talents in Resilience Engineering Program, managed by the Resilience Engineering Association (REA) for the REA Symposium 2023.
2022	<b>IEOM Outstanding Student Leadership Award.</b> Awarded by the Industrial Engineering and Operations Management Society during the 5 <sup>th</sup> IEOM European Conference, 26-28 July 2022 – Rome, Italy
2021	<b>Winner of ESRA (European Safety and Reliability Association) scholarship</b> for the continuing education course on “Advanced Quantitative Risk and Resilience Assessment” organized by the Department of Energy – Politecnico di Milano, 12 October - 18 November 2021

- 2021 **IEOM Outstanding Student Leadership Award.** Awarded by the Industrial Engineering and Operations Management Society during the 4<sup>th</sup> IEOM European Conference, 2-5 August 2021 – Rome, Italy
- 2021 **IEOM Poster Competition Award (2<sup>nd</sup> place).** Awarded by the Industrial Engineering and Operations Management Society during the 4<sup>th</sup> IEOM European Conference, 2-5 August 2021 – Rome, Italy
- 2021 **IEOM Simulation Competition Award (2<sup>nd</sup> place).** Awarded by the Industrial Engineering and Operations Management Society during the 4<sup>th</sup> IEOM European Conference, 2-5 August 2021 – Rome, Italy

## SCIENTIFIC BOARD/COMMITTEE MEMBERSHIPS

- since 2024 **Member** of IEA (International Ergonomics & Human Factors Association) Technical Committee on Resilience Engineering
- 2024 **International scientific committee member** ISM 2024 – International Conference on Industry 4.0 and Smart Manufacturing, 13 to 15 November 2024 – Prague, Czech Republic (to be held)
- 2024 **Technical committee member** NEESSC 2024 – New Energy and Energy Storage System Control Summit Forum, 29 to 31 August 2024 – Hohhot, China (to be held)
- 2024 **Technical committee and reviewers member** 5<sup>th</sup> IEOM South American Conference on Industrial Engineering & Operations Management, 7-9 May 2024 – Bogota, Colombia
- since 2023 **Editorial review board member** of Journal of Artificial Intelligence (AI) in Business and Management (IGI Global)

## REVIEWING ACTIVITIES

- since 2024 Journal of Loss Prevention (Elsevier)
- since 2024 Scientific Reports (Springer Nature)
- since 2024 Journal of Hydrology (Elsevier)
- since 2024 Ciência & Saúde Coletiva (Associação Brasileira de Saude Coletiva)
- 2024 ISM 2024 – International Conference on Industry 4.0 and Smart Manufacturing, 13 to 15 November 2024 – Prague, Czech Republic
- 2024 5<sup>th</sup> IEOM South American Conference, on Industrial Engineering & Operations Management, 7-9 May 2024 – Bogota, Colombia
- since 2024 Environmental Science: Water Research & Technology (Royal Society of Chemistry)
- since 2024 Computers in Industry (Elsevier)
- 2024 AHFE 2024 – 14<sup>th</sup> International Conference on Applied Human Factors and Ergonomics, July 24-27, 2024 – Université Côte d'Azur, Nice, France
- since 2024 Applied Ergonomics (Elsevier)
- since 2024 The Journal of Supercomputing (Springer Nature)
- since 2024 International Journal of Reconfigurable and Embedded Systems (IAES)
- since 2024 Expert Systems with Applications (Elsevier)
- since 2024 Archives of Advanced Engineering Science (BonView Press Publishing)
- since 2024 Qeios
- since 2023 Science Progress (Sage)
- since 2023 Processes (MDPI)
- 2023 ESREL 2023 – European Conference on Safety And Reliability (ESREL), 03-08 September 2023 – Southampton, United Kingdom
- since 2023 Electronics (MDPI)
- since 2023 Sustainability (MDPI)
- 2023 MICRADS'23 – Multidisciplinary International Conference of Research Applied to Defense and Security, 06-08 July 2023 – Bogotá, Colombia

- 2023 AHFE 2023 – 14<sup>th</sup> International Conference on Applied Human Factors and Ergonomics, 20-24 July 2023 – San Francisco, California, USA
- 2023 IFKAD – International Forum on Knowledge Asset Dynamics, 7-9 June 2023 – Matera, Italy
- 2022 5<sup>th</sup> IEOM European Conference, 26-28 July 2022 – Rome, Italy

## **MEMBERSHIPS OF SCIENTIFIC SOCIETIES**

- since 2022 **Student Member**, IEEE (Institute of Electrical and Electronics Engineers)
- since 2021 **Junior Member**, AIDI (Italian Association of Operations Management Professors)
- 2020 - 2022 **Member**, PMI (Project Management Institute)

## **LANGUAGES**

Italian: mother tongue

English: B2

Francesco Simone