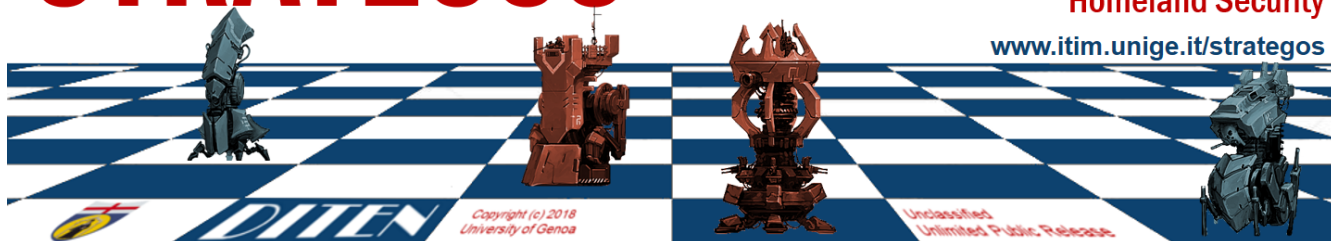# STRATEGOS

**Engineering Technologies for Strategy in Defense, Industry, Government & Homeland Security**

www.itim.unige.it/strategos

*Strategic Engineering: Innovative Technology for Strategy and Security*

## STRATEGOS Faculty

| | |
|---|---|
| **Name** | **Antonio** |
| **Family Name** | **Giovannetti** |
| **Citizenship** | **Italian** |
| **Affiliation** | **Sim4Future srls, Simulation Team & STRATEGOS at University of Genoa** |

**Present Position**

Member of Simulation Team
PhD Student in Strategic Engineering
Strategic Engineering for Sim4Future
Adjunct Professor of Strategic Programs in STRATEGOS, Strategic Engineering MSc at Genoa University
Adjunct Professor of Operations Management
Adjunct Professor of Logistics, Management Engineering, University of Genoa

**Experiences**

- Researcher at Simulation Team, University of Genoa
- Consultant for SIM4Future in R&D Projects on Modeling & Simulation , Autonomous Systems, Industrial Plants
- Visiting Researcher at University de La Rioja and Aix-Marseille

**Education & Special Certificates**

Antonio Giovannetti conducted his engineering studies at University of Roma Tor Vergata in Engineering and finalized his Master of Science in Electronic Medical and Bio-Engineering. He has acquired experience working on Medical Data Analytics, Applied Statistics and Artificial Intelligence, in which he used his skills in Matlab and Python. He published his thesis intitled "Deep-MEG: spatiotemporal CNN features and multiband ensemble classification for predicting the early signs of Alzheimer's disease with magnetoencephalography".

Thanks to these studies, he has gained experience in the use of Big Data and Modeling and Simulation of Complex Systems as well as the creation of predictive models by using Artificial Intelligence. In particular he performed some crucial activities in order to model problems: problem identification, design of experiment, data collection, data extraction, pre-processing, model setup, data analysis, model execution, machine learning, virtual presentation of results.

He successfully completed the NATO M&S Basic Course and Project Management Operational Module.

He is researcher in the field of Modeling & Simulation in Defense, logistics and Industrial Plant sectors

He is part of MIPET (Master in Industrial Plant Engineering and Technology) Faculty as well as of STRATEGOS MSc.

He has been teacher in Data Analytics and Complex System Module at the Joint Warfare Tactical Center of Qatar for Simulation Team

He partecipate in NATO MSG-ET-57

## Professional & Scientific Experiences

He is active in researches on AI (Artificial Intelligence), M&S (Modeling and Simulation), UGV (Unmanned Ground Vehicles) and innovative XR (eXtendend Reality) applied to Industrial Plants and Defense. He is participating in NATO MSG-189 and related Meetings on AI Augmented Immersive Simulation in Training and Decision Making Course of Actions Analysis, organized within NATO MSG (Modelling and Simulation Group)

His research is currently focused on Modelling, Simulation and Artificial Intelligence fields, and XR/VR/AR (eXtended, Virtual & Augmented Reality) technologies, in order to contribute to define new paradigms and create new paradigms with special attention to Industrial Plant Engineering.

With Sim4Future and Simulation Team He successfully developed and delivered to NATO ACT the first Simulator for Cognitive Warfare and Simulator for support for PM-ADM. In these projects he developed Human Behavior models to simulate information propagation through networks using LLMs and AI. He developed with Simulation Team different wargames for multidomain and multi dimensions purpose, such as multi domain chessboard to evaulate strategic decision over multiple layers.

He has been involved in project for the creation of virtual laboratories in order to manage TIM/TIC, CBRNe Crisis in Ports.

Researchers addressing the use of Artificial intelligence for early diagnosis of Alzheimer's disease by Magnetoencephalography

He has been involved in Laboratory activities at Santa Lucia in Rome in the field of Space Physiology: body weight relief systems, simulations of microgravity conditions through the use of Augmented Reality.

He developed with Simulation Team a Virtual Laboratory in order to manage Maritime Crises in Harbours

He developed with Simulation Team a UGV Simulator for Industrial Facilities in order to minimize costs and risks within hazardous environments and ensure that the system is easy to be operated and designed in order to fully meet the needs of the users who will be in charge operate, maintain and support the system.

He took part in SEE (Simulation Exploration Experience) Project organized by NASA, Johnson Space Center and Kennedy Space Center in relation to ARTEMIS Project for creating a Moonbase. In this framework he cooperated in creation and development of an interoperable federation for Extra Planetary Operations dealing with use of autonomous Systems.

He parteicpate in NATO MSG-ET-57 Validation & Verification

Teams coordinated by him won the Best Project Award on ICAMES at Bogazici University, Istanbul in International Competition organized by Engineering Society.

He published and presented several papers in International Journals and Conferences such as I3M, ISM, CA2X2. He is member of the International Program Committee of Conferences on Modeling and Simulation.

## Research Interests

- Modeling and Simulation
- Machine Learning & Artificial intelligence
- Operations Management
- Strategic Engineering
- Big Data and Data Analytics
- Statistics and Design of Experiments (DOE)
- Extended Reality

## Scientific Publications & Book

- "Deep-MEG: spatiotemporal CNN features and multiband ensemble classification for predicting the early signs of Alzheimer's disease with magnetoencephalography", May 2021, Neural Computing and Applications Journal
- "A deep CNN-based approach for predicting MCI to AD conversion: Developing topics", December 2020, Alzheimer's & dementia: the journal of the Alzheimer's Association
- Bruzzone, A. G., Giovannetti, A., Cirillo, L., Gotelli, M., & Ghisi, F. (2024). An Audacious Wargame on Critical Infrastructures based on LLMs and Simulation over Physical, Cyber & Cognitive Actions.
- Bruzzone, A., Giovannetti, A., Gotelli, M., Hodicky, J., Massei, M., De Paoli, A., ... & Ghisi, F. (2024). Strategic Engineering to support Decision Makers in Complex Systems: Innovative Models for Cognitive Warfare Simulation.
- "Sub-dermal battery-less wireless sensor for the automatic monitoring of cattle fever", August 2020, XXXIIIrd General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS)

- "SRM and Performance Evaluation Models for Logistics Optimization in Consumer Supply Chain,2023,25th International Conference on Harbor, Maritime and Multimodal Logistics Modelling and Simulation, HMS 2023
- Sustainability, Environmental Impacts and Resilience of Strategic Infrastructures,2023,Proceedings of the International Workshop on Simulation for Energy, Sustainable Development and Environment, SESDE
- Strategic Engineering for Decision Making during Urban Crises,2023,Proceedings of the International Defense and Homeland Security Simulation Workshop, DHSS
- Safety and Security in the Marine and Harbor Environment,2023,25th International Conference on Harbor, Maritime and Multimodal Logistics Modelling and Simulation, HMS 2023
- Cooperative Use of Autonomous Systems to Monitor Toxic Industrial Materials and Face Accidents & Contamination Crises,2023,Modelling and Simulation for Autonomous Systems
- An Audacious Wargame on Critical Infrastructures based on LLMs and Simulation over Physical, Cyber & Cognitive Actions,2024,14th International Defense and Homeland Security Simulation Workshop
- Modeling & Simulation for an Investigation Process to support Decision Making in a Non-Ordinary Context,2024,36th European Modeling & Simulation Symposium,
- Blockchain for Secure Railway Signal Communication & Protection of Critical Infrastructures,2024,14rd International Defense and Homeland Security Simulation Workshop
- Strategic Engineering to support Decision Makers in Complex Systems: Innovative Models for Cognitive Warfare Simulation,2024,14th International Defense and Homeland Security Simulation Workshop,
- Scenario Simulation to Investigate new Solutions for Port Terminals and Plants based on Intelligent Data Fusion and Supply Chain Modeling,2024,26th International Conference on Harbor, Maritime and Multimodal Logistic Modeling & Simulation
- "Promoting Safety, Security, Awareness and Productivity in Port
- Plants,2024,"
- Reducing Dangers within Industrial Plants by Extended Reality,2021,Proceedings of the 18th International Multidisciplinary Modeling & Simulation Multiconference
- Autonomous Systems for Industrial Plants and Iron & Steel Facilities,2021,Proceedings of the 33rd European Modeling & Simulation Symposium (EMSS 2021)
- Improving Efficiency and Safety for Heat Exchangers and Water Piping by innovative Solutions,2021,Proceedings of the 9th International Workshop on Simulation for Energy, Sustainable Development & Environment
- Simulation as enabler for Engineering Future Smart Grids,2021,Proceedings of the 9th International Workshop on Simulation for Energy, Sustainable Development & Environment
- STRATEGIC ENGINEERING APPLIED TO COMPLEX SYSTEMS WITHIN MARINE ENVIRONMENT,2021,Proceedings of the 2021 ANNUAL MODELING AND SIMULATION CONFERENCE
- Interoperable Simulation for Space Logistics & Operations for a Moon Base,2021,Proceedings of the 20th International Conference on Modelling and Applied Simulation
- "IMMERSIVE, INTEROPERABLE, INTUITIVE, INTERACTIVE VIRTUAL ENVIRONMENT FOR DEVELOPING
- AND DELIVERING TRAINING BY SIMULATION TO OPERATORS IN DANGEROUS AREAS & ACTIVITIES,2022,Atti del convegno"
- Innovative Virtual Lab for Improving Safety and Port Operations,2022,24th International Conference on Harbor, Maritime and Multimodal Logistics Modelling and Simulation, HMS 2022

- Evaluation of Risk Awareness by Simulation & Extended Reality in Industrial Plants,2022,34th European Modeling and Simulation Symposium, EMSS 2022
- Digital Twin for Pilot Plant for Water Treatment,2022,10th International Workshop on Simulation for Energy, Sustainable Development and Environment, SESDE 2022
- Models & Solutions for Strategic Decision Makers during CBRN Crises in Industrial & Urban Environments,2022,12th International Defence and Homeland Security Simulation Workshop, DHSS 2022
- Hybrid and Cyber Threats in Towns, Critical Infrastructures and Industrial Plants,2022,12th International Defence and Homeland Security Simulation Workshop, DHSS 2022
- Digital Twins for Developing Innovative Industrial Autonomous Systems,2022,21st International Conference on Modeling and Applied Simulation, MAS 2022
- Serious Games, Simulation and IoT/IIoT for improving harbor performance,2022,24th International Conference on Harbor, Maritime and Multimodal Logistics Modelling and Simulation, HMS 2022
- Strategic Engineering for Enhancing Efficiency and Effectiveness of Water Management Systems,2022,10th International Workshop on Simulation for Energy, Sustainable Development and Environment, SESDE 2022
- Operations in Ports supported by Simulation, XR and AI,2023,25th International Conference on Harbor, Maritime and Multimodal Logistics Modelling and Simulation, HMS 2023
- Strategic Engineering: Transforming P&ID Documents into Digital Twins via Machine Learning and Cloud Computing,2023,Proceedings of the International Conference on Modeling and Applied Simulation, MAS
- Autonomous System Digital Twin to test Machine Vision,2023,Proceedings of the International Conference on Modeling and Applied Simulation, MAS
- Data Analytics and Machine Learning for very large Oil&Gas Projects,2023,Proceedings of the International Conference on Modeling and Applied Simulation, MAS
- Data Analytics for Safety and Security within Ports based using Open Sources,2023,25th International Conference on Harbor, Maritime and Multimodal Logistics Modelling and Simulation, HMS 2023

Languages

Italian (Native Language)
English (C2 Proficiency)

Other Experiences

long experience on Judo at Competitive Level. Experience on sailing as well as in sport driving on track.

*I hereby authorize STRATEGOS, Genoa University and Simulation Team to share my CV for Professional and Scientific Reasons with Companies & Institutions*

**SIM4FUTURE srls**, Spin off dell'Università degli Studi di Genova & Proud Member of Simulation Team
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