



2025 IEEE INTERNATIONAL WORKSHOP ON

Technologies for Defense and Security

ROMA, ITALY / NOVEMBER 5-7, 2025

[FINAL PROGRAM]



TABLE OF CONTENTS

TABLE OF CONTENTS	1
IEEE TechDefense 2025 Committee	2
IEEE TechDefense 2025 Keynote Speakers	5
IEEE TechDefense 2025 Venue	10
IEEE TechDefense 2025 Social Events.....	11
IEEE TechDefense 2025 Patronages	12
IEEE TechDefense 2025 Sponsors.....	15
Program Schedule - Wednesday, November 5.....	16
Program Schedule - Thursday, November 6	17
Program Schedule - Friday, November 7	18
Technical Program - Wednesday, October 5	19
Technical Program - Thursday, October 6	26
Technical Program - Friday, October 7	35

IEEE TechDefense 2025 Committee

GENERAL CHAIRS

Pasquale Daponte, University of Sannio, Italy

Alfonso Farina, Selex-ES (retired), Rome, Italy

Giovanni Savoldelli Pedrocchi, AFCEA - Chapter of Naples, Italy

TECHNICAL PROGRAM CHAIR

Domenico Accardo, University of Napoli Federico II, Italy

PUBLICATION CHAIR

Valentina Markova, Technical University of Varna, Bulgaria

AWARD CHAIR

Jože Guna, University of Ljubljana, Slovenia

TREASURER

Luca De Vito, University of Sannio, Italy

IEEE WIE ACTIVITIES CHAIRS

Galia Marinova, Technical University of Sofia, Bulgaria

Patrizia Lamberti, University of Salerno, Italy

IEEE YOUNG PROFESSIONALS ACTIVITIES CHAIRS

Matteo Ciotola, University of Naples Federico II, Italy

SPECIAL SESSION CHAIR

David Martin Gomez, Universidad Carlos III de Madrid, Spain

INDUSTRY LIAISON CHAIR

Lucian Toma, University "Politehnica" of Bucharest, Romania

POSTER SESSION CHAIR

Ahmed Madian, NILE University, Giza, Egypt

INTERNATIONAL PROGRAM COMMITTEE

Gianluca Antonelli, Università di Cassino e Lazio Meridionale, Italy

Allan Belcher, Signal Conversion Ltd., UK

Amine Bendarma, Arts et Métiers campus of Rabat, Morocco

Stefano Bistarelli, University of Perugia, Italy

Luigi Boccia, University of Calabria, Italy

Bartosz Brzozowski, JSW Innowacje S.A., Poland

Michele Buonsanti, Mediterranean University of Reggio Calabria, Italy

Antonio Caruso, University of Salento, Italy



David Chechelashvili, Ilia State University, Georgia
Nato Chubinidze, Ivane Javakhishvili Tbilisi State University, Georgia
George Culea, "Vasile Alecsandri" University of Bacau, Romania
Matteo Lorenzo Dalla Vedova, Polytechnic of Turin, Italy
Sebastiano D'Amico, University of Malta, Malta
Hugo Plácido da Silva, University of Lisbon, Instituto Superior Técnico, Portugal
Ines Delfino, University of Tuscias, Italy
Joaquin Del Rio Fernandez, Universitat Politècnica de Catalunya, Spain
José Alberto de Jesus Borges, Portuguese Military Academy, AFCEA Portugal
Alan Oliveira de Sá, University of Lisbon, Faculty of Sciences, Portugal
Gianpaolo Di Bona, University of Cassino, Italy
Octavia A. Dobre, Memorial University, Canada
Zdenek Dvorak, University of Zilina, Slovak Republic
Maksims Feofilovs, Riga Technical University, Latvia
Alessia Ferraro, University Mediterranea of Reggio Calabria, Italy
Lucia Figuli, University of Zilina, Slovak Republic
D. Funda Kurtulus, Middle East Technical University, Türkiye
Diego Galar, Luleå University of Technology, Sweden
Laura Giarrè, IEEE SMC Italy Chapter, Italy
David Martín Gómez, Carlos III University of Madrid, Spain
Mariacarla Lugarà, University Mediterranea of Reggio Calabria, Italy
José Antonio Iglesias Martínez, Carlos III University of Madrid, Spain
Laura Mainini, Politecnico di Torino, Italy
Francesco Masulli, IEEE Italy Section Computational Intelligence Society Chapter, Italy
Vasil Guliashki, Institute for Information and Communication Technologies, Bulgarian Academy of Sciences, Bulgaria
Martin Hromada, Tomas Bata University in Zlín, Czech Republic
Chi Hung Hwang, NARLabs, Taiwan
Damir Ilić, University of Zagreb, Croatia
Roberta Ivaldi, Italian Navy, Italy
Jerzy Józwick, Lublin University of Technology, Poland
Klosak Macej, Uniwersiapolis d'Agadir, Morocco
Marco Maffei, Thales Alenia Space, Italy
Ilias Majdouline, Universiapolis d'Agadir, Morocco
Galia Marinova, Technical University of Sofia, Bulgaria
Valentina Markova, Technical University of Varna, Bulgaria
Romuald Masnicki, Gdynia Maritime University, Poland
Maurizio Migliaccio, Ocean Engineering Chapter, Italy
Daniel Mihai Toma, Universitat Politècnica de Catalunya, Spain
Janusz Mindykowski, Gdynia Maritime University, Poland
Cristian-Emil Moldoveanu, Military Technical Academy "Ferdinand I" of Bucharest, Romania
Ferdinando Nunziata, Geoscience and Remote Sensing South Italy Chapter, Italy
Giacomo Oliveri, IEEE Italy Section Antennas and Propagation/Electron Devices/Microwave Theory and Techniques Chapter, Italy

Erika Ottaviano, University of Cassino, Italy
Florentin Paladi, Moldova State University, Republic of Moldova
Antonello Pagliuca, Università degli Studi della Basilicata, Italy
Santi Concetto Pavone, IEEE YP Affinity Group Italy Section, Italy
Vito Puliafito, IEEE Chapter Magnetics, Italy
Ágoston Restás, National University of Public Service, Hungary
Roberto Sabatini, Khalifa University of Science and Technology, United Arab Emirates
António Serra, Instituto de Telecomunicações, Portugal
Natalia Shyriaieva, National Technical University "Kharkiv Polytechnic Institute", Ukraine
Luigi Sinapi, International Hydrographic Organization
Todor Tagered, IICT, BAS, Bulgaria
Ioannis Templalexis, Hellenic Air Force Academy, Greece
Jovan Trajkovski, University of Ljubljana, Slovenia
Roberto Trevisani, GEM Elettronica Srl, Italy
Teodoro Valente, CNR-IPCB Sapienza University of Rome, Italy
Mauro Velardocchia, Polytechnic of Turin, Italy
Riccardo Viale, University of Milano-Bicocca, Italy
Konrad Wojtowicz, Military University of Technology, Poland

IEEE TechDefense 2025 Keynote Speakers

Plenary Session - Wednesday November 5 - H 10:30



Advanced technologies to strengthen Italian Defense and guarantee the security of a country's capabilities

Luca Goretti

Italian Air Force

ABSTRACT

A country's security now depends not only on traditional military strength but also on digital, biological, and space capabilities.

The strongest defense lies in combining Cybersecurity&Digital Defense, Artificial Intelligence & Autonomous Systems, Space & Satellite Defense, Advanced Weapons & Kinetics, Biotechnology & Human Enhancement, Surveillance, Reconnaissance & Intelligence and Critical Infrastructure Protection.

SPEAKER BIOGRAPHY

Lt Gen **Luca Goretti** was born in Rome on the 15th of May 1962. From 31st of October 2021 to 15th of May 2025 Lt. Gen. Luca GORETTI was the Italian Air Force Chief of Staff. He served as the senior uniformed Air Force Officer responsible for the organisation, training and equipment of 44000 active- duty men and women serving in Italy and overseas. In accordance with the directives of the Chief of Defense Staff, he was responsible for the preparation and deployment of the national airspace defense system and, for this purpose, he coordinated the deployment of all the means involved in the defense of national airspace.

Lt. Gen. Luca GORETTI was commissioned in 1980 and attended the Italian Air Force Academy, in 1985 he graduated as a Military Pilot at the Euro NATO Joint Jet Pilot Training (ENJJPT) at Sheppard AFB (Texas - USA), flying the T-38 jet trainer. Following his assignment on the Tornado at Cottesmore AFB (UK), he has served in a variety of position at the squadron and wing levels, taking part to the initial phase of Persian Gulf operations and within the framework of NATO air campaign in the former Yugoslavia and Balcan Region. Tornado Flight Instructor, he took in

major national and international exercises such as Red Flag, Maple Flag Goose Bay and TLP. Lt. Gen. GORETTI has commanded 156th Fighter Squadron and 32nd Fighter Wing.

His notable staff tours included Head of the Prevention Office of the Flight Safety Inspectorate and Director of Flight Safety magazine; Chief of Planning & Transformation Office within ItAF Staff, Deputy Chief of the Defense Planning, Programming and Budget General Office and Deputy Chief of the Cabinet of the Minister of Defense. He also served as Defense and Defense Cooperation Attaché accredited to the USA, Canada and Mexico at the Italian Embassy in Washington DC and as Italian Air Force Deputy Chief of Staff.

Plenary Session - Thursday November 6 - H 11:00



Technology Innovation Through Experimentation in the Indo-Pacific Region

Jeffrey Newcamp

PhD, USAF, Deputy Science & Technology Advisor, USINDOPACOM J8

ABSTRACT

This keynote will address the use case of employing experimentation to strengthen technology innovation and increase technology readiness levels. It will highlight methodologies for building partnerships through science and technology relationships across borders, for mutual benefit, and will focus on recent successes from multi-domain experiments in the Indo-Pacific region.

The Indo-Pacific region spans 52 percent of Earth's surface, encompassing over 260 million square kilometers, 36 nations and half the world's population. The region boasts tremendous technological innovation in academic laboratories, in the commercial sector and in the defense industrial base. Advances in science and technology areas that enhance collective security abound. Thus, strategic partnering in the region demands technology solutions that transcend national boundaries and are broadly employable.

Because future conflict will span multiple domains, advancing technologies must be validated for multi-domain and multi-spectra use. Innovators must seek designs that are resilient and scalable and that make sense for their environment and employment scenarios. Multi-partner, multi-domain exercises designed to test and experiment on innovative products are vital to this process. This keynote will discuss successes and failures during technology experimentation with a focus on sharing best practices for accelerating technology transition and mutual deterrence.

SPEAKER BIOGRAPHY

Colonel **Jeffrey Newcamp** PhD, USAF, is the Deputy Science and Technology Advisor to the United States Indo-Pacific Command (USINDOPACOM). He leads the International Science and Technology engagement program to strengthen defense partnerships through science and technology advancement. Additionally, Col Newcamp provides advice in scientific matters and evaluates science and technology solutions to warfighter requirements.

Colonel Newcamp commissioned as a Distinguished Graduate and Top Cadet of the Air Force Reserve Officer Training Corps at the University of Notre Dame. He completed graduate school at the Air Force Institute of Technology then deployed as an aircraft battle damage repair engineer. Following graduation from Test Pilot School, Colonel Newcamp served as initial cadre for the F-35 developmental test program then tested the CV-22 Osprey tiltrotor, the MH-139 and the HH-60W. He has flown 35 aircraft types.

Colonel Newcamp was Associate Professor and Director of the Systems Engineering Program at the United States Air Force Academy, Colorado where he managed all aspects of the Systems Engineering major for 240+ cadets and a teaching staff that spanned seven academic departments. Colonel Newcamp served as Deputy Commander of the 96th Operations Group, Eglin AFB, Florida. There he was responsible for approximately 800 personnel assigned to eight diverse units performing flight and ground test operations across six geographically separated sites. Colonel Newcamp oversaw planning, execution and reporting for thousands of USAF conventional munitions and operational flight program tests on F-15, F-16, A-10, UH-1, HH-60, MH-139, CV-22, C-130, AWACS and Big Safari aircraft. Colonel Newcamp most recently served as International Program Officer for the Air Force Office of Scientific Research, Tokyo, Japan. He scoured Asian research institutions in search of the most promising basic science research in the aerospace sciences field.

Colonel Newcamp has taught aviation courses at the University of Notre Dame and engineering courses at the United States Air Force Academy. He holds a PhD in aerospace engineering from the Delft University of Technology, Netherlands, is Chair Emeritus of the American Institute of Aeronautics and Astronautics' (AIAA) Systems Engineering Technical Committee and is an Associate Fellow of AIAA.

Plenary Session - Friday November 7 - H 11:10

Italian Army in the Counter-Drone race

Giovanni Chessari

Italian Army

SPEAKER BIOGRAPHY

Col. **Giovanni Chessari** was born in Comiso (Sicily) in a sunny day of May 14th 1971. He is happily married with Ms Gabriella, they have no children but two lovely dogs. Colonel Chessari is passionate for sports, practicing a lot of them, love running and swimming among all. He also loves to su er watching football on TV, being a big fan of Inter Milan. He speaks quite a fluent English, is capable of communicate in Spanish and able to survive in Portuguese. Colonel Chessari commenced his career within the Modena Military Academy, attending the 173th Course in september 1991. He subsequently undertook a number of further courses in Italy and abroad.

Throughout his military career, Colonel Chessari has participated in numerous operations and missions that have seen the Italian Armed Forces contribute to international stability, security and peace, and protect and safeguard vital and strategic national interests. In 1999, with the rank of Captain he participated in Operation Joint Forge as team leader of a multinational team with the important mission of armaments control in Bosnia. In 2000 he led a multinational team of the European Union Monitor Mission in FYROM (now North Macedonia). In 2004 he participated in Operation Antica Babilonia, in Iraq – Bashra, deployed as J9 coordinator for the Regional Command.

In 2013, with the rank of Lieutenant Colonel, he was deployed for one year in the ISAF Mission at Kabul Airport as XO for the Director Of Current Operations in IJC (ISAF Joint Command). In all Ranks Colonel Chessari has commanded Air Defence specialistic Unit. He started as Captain in the 4th AD regiment, in Cremona and Mantua, with the HAWK missile system. Promoted Lieutent Colonel he took command in 2015as Group Commander of the 121st AD regiment, this regimenti was equipped with Stinger Missile. During this period under his command he led a firing live exercise in the international firing range in Creete. Promoted Colonel he is now the Director of the Italian Centre of Excellence Counter mini/micro UAS.

Colonel Chessari’s professional background includes the position of Chief of Sta of the Air Defence Army HQ this was his last assignment. He also gained a deep knowledge of NATO when assigned at the NATO Rapid Deployable Corps – Italy in Solbiate olona, here with two separate tour of duty was assigned in the in Operation Division first, and as Section Head Air Land Integration in his last appointment. His experience within NATO was completed with a tour of duty (2019-2022) at the Allied Command for Transformation in NORFOLK (VA). He was section head Lesson Learned there, his role enabled him to interact with both NATO and other international bodies, including Africa Union.

IEEE TechDefense 2025 Venue

IEEE TechDefense 2025 will be held at “*La Casa dell’Aviatore*”

ADDRESS

La Casa dell’Aviatore

Viale dell’Università, 20 - Roma



DRESS CODE

The conference will take place at Casa dell’Aviatore in Rome, where **a formal dress code applies**: jacket and tie are required, while jeans, sneakers, and any attire not consistent with the elegant setting of the venue are not permitted.



Technologies for
Defense and Security
ROME, ITALY / NOVEMBER 5-7, 2025

IEEE TechDefense 2025 Social Events

WELCOME PARTY

Wednesday November 5 - H 19:00

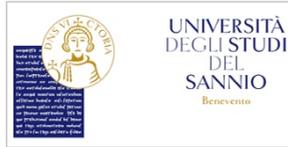
The IEEE TechDefense 2025 **Welcome Party** will be held at “*La Casa dell’Aviatore*” - Sala Soci on **Wednesday, November 5 - 19:00**.

GALA DINNER

Thursday November 6 - H 20:00

The IEEE TechDefense 2025 **Gala Dinner** will be held at “*La Casa dell’Aviatore*” - Sala Soci on **Thursday, November 6 - 20:00**.

IEEE TechDefense 2025 Patronages



UNIVERSIAPOLIS
Université Internationale d'Agadir
الجامعة الدولية لكادير



LULEÅ
TEKNISKA
UNIVERSITET

UNIVERSITÀ DEGLI STUDI DELLA BASILICATA
**UNIVERSITÀ
DEGLI STUDI DELLA
BASILICATA**



ESCUELA SUPERIOR
DE GUERRA
"General Rafael Reyes Prieto"
Colombia

**Universidad de
los Andes**
Colombia



**POLITEKNIKA
LUBELSKA
LUBLIN UNIVERSITY
OF TECHNOLOGY**

**POLISH
METROLOGICAL
UNION**

**PAŃSTWOWA
AKADEMIA
NAUK
STOSOWANYCH
W CHELMIE**



**Centrum
Lotnicze**



**Military
University
of Technology**

**Arts Institute of
Technology
et Métiers
Campus of Rabat**

**北九州市立大学
THE UNIVERSITY OF KITAKYUSHU**

DIES
DIPARTIMENTO DI
ECCCELLENZA
2023-2027

**Ciências
ULisboa** Faculdade
de Ciências
de Universidade
de Lisboa



Department of Aerospace Engineering



FPP

UNIVERSITY
OF LJUBLJANA

Faculty of Maritime Studies
and Transport



L-Università ta' Malta
Faculty of Science

Department
of Geosciences

 **GEM ELETTRONICA**
a LEONARDO company

associazione italiana
gme
gruppo misure
elettriche ed elettroniche

MNT
Gruppo Nazionale

IEEE TechDefense 2025 Sponsors



Program Schedule - Wednesday, November 5

WEDNESDAY, NOVEMBER 5			
10:00 - 10:30	OPENING CEREMONY - WELCOME ADDRESSES		
10:30 - 11:10	KEYNOTE LECTURE - Advanced technologies to strengthen Italian Defense and guarantee the security of a country's capabilities Luca Goretti, Italian Air Force		
11:10 - 11:30	COFFEE BREAK		
	Sala Francesco Baracca	Sala Italo Balbo	Sala del Gioco
11:30 - 13:10	S1.1 - Special Session #3: Advanced Integration of Defense Systems and Flight Security: Methods and Technologies - PART I	S1.2 - Special Session #4: Advances in GNSS jamming and spoofing mitigation techniques	S1.3 - General Session - PART I
13:00 - 14:10	LUNCH		
14:15 - 16:15	ROUND TABLE - Cybersecurity and AI: Strengthening Defense and Ensuring the Security of Our Country		
16:15 - 16:30	COFFEE BREAK / POSTER SESSION		
	Sala Francesco Baracca	Sala Italo Balbo	Sala del Gioco
16:30 - 18:30	S2.1 - Special Session #3: Advanced Integration of Defense Systems and Flight Security: Methods and Technologies - PART II	S2.2 - Special Session #2: Resilient Autonomy: Coordinated Control and Intelligence in Multi-Agent Robotic Systems for Defense Applications	S2.3 - Special Session #1: Target Recognition for Radar and IAMD Systems
19:00	WELCOME PARTY - Casa dell'Aviatore		

Program Schedule - Thursday, November 6

THURSDAY, NOVEMBER 6			
	Sala Francesco Baracca	Sala Italo Balbo	Sala del Gioco
09:00 - 10:40	S3.1 - General Session - PART II	S3.2 - Special Session #5: Non-invasive monitoring of psychophysiological states of military personnel during operation and training	S3.3 - Special Session #6: Agentic AI and Strategic Synthesis for Next-Generation Defense Systems
10:40 - 11:00	COFFEE BREAK / POSTER SESSION		
11:00 - 11:40	KEYNOTE LECTURE - Technology Innovation Through Experimentation in the Indo-Pacific Region Col. Jeffrey Newcamp, PhD, USAF, Deputy Science & Technology Advisor, USINOPACOM J8		
11:40 - 13:00	S4.1 - Special Session #15: Radar Electronic Attack and Electronic Protection	S4.2 - Special Session #13: ISaCAGE - FLARE: Integration and coexistence of sensing and communication systems that share the same spatial and spectrum resources	S4.3 - Special Session #14: Military Innovation in Education & Technology
13:00 - 14:30	LUNCH		
	Sala Francesco Baracca	Sala Italo Balbo	Sala del Gioco
14:30 - 16:10	Round Table: Innovation and Entrepreneurship in Defense Technologies	Round Table - New Technologies for Security and Defence: Ethical-Legal and Political Challenges in International Cooperation	Special Session #8: Technology of the Arts of Intellect and the resulting risks for diplomatic activity
16:10 - 16:30	COFFEE BREAK		
16:30 - 18:30	S5.1 - Special Session #19: Emerging Defense Technologies in Latin America: Innovation, Challenges, and Regional Cooperation	S5.2 - Special Session #18: Ethics, Law & Politics Of Technologies For Defense And Security	S5.3 - General Session - PART III
20:00	GALA DINNER - Casa dell'Aviatore - Sala Soci		

Program Schedule - Friday, November 7

FRIDAY, NOVEMBER 7			
	Sala Francesco Baracca	Sala del Gioco	
09:30 - 10:50	S6.1 - Special Session #17: Young Researchers Activities in Technologies for Defense and Security - PART I	S6.2 - Special Session #11: Special Session "IEEE Women in Engineering with Focus in Cybersecurity and AI" - PART I	
10:50 - 11:10	COFFEE BREAK / POSTER SESSION		
11:10 - 11:50	KEYNOTE LECTURE - Italian Army in the Counter-Drone race Col. Giovanni Chessari, Italian Army		
11:50 - 12:50	S7.1 - Special Session #9: Battlefield Operational Technology and Secure Internet of Battlefield Things	S7.2 - Special Session #10: Methods, algorithms and solutions for securing energy grids against cyber-attacks	
12:40 - 14:00	LUNCH		
	Sala Francesco Baracca	Sala del Gioco	
14:00 - 15:20	S8.1 - Special Session #17: Young Researchers Activities in Technologies for Defense and Security - PART II	S8.2 - Special Session #11: Special Session "IEEE Women in Engineering with Focus in Cybersecurity and AI" - PART II	
15:20 - 15:40	COFFEE BREAK		
15:40 - 16:00	CLOSING AND AWARD CEREMONY		

Technical Program - Wednesday, October 5

09:00 - 18:00 *Casa dell'Aviatore - First Floor*
REGISTRATIONS

10:00 - 10:30 *Sala Francesco Baracca*
OPENING CEREMONY - WELCOME ADDRESSES

10:30 - 11:10 *Sala Francesco Baracca*
PLENARY SESSION - KEYNOTE LECTURE
Chair: Giovanni Savoldelli Pedrocchi, *AFCEA - Chapter of Naples*

Advanced technologies to strengthen Italian Defense and guarantee the security of a country's capabilities

Luca Goretti, Italian Air Force

11:10 - 11:30 *Casa dell'Aviatore - First Floor*
COFFEE BREAK

11:30 - 13:10 *Sala Francesco Baracca*
Session 1.1 - Advanced Integration of Defense Systems and Flight Security: Methods and Technologies - PART I
Chairs: Michele Buonsanti, *University of Reggio Calabria, Italy*
Alessia Ferraro, *University of Reggio Calabria, Italy*
Valerio Scordamaglia, *University of Reggio Calabria, Italy*

11:30 AI in Support of Air Accidents Investigation: a New Strategy for Risk Identification and Opportunities Seeking
Gian Luca Greco (Italian Air Force, Italy); Francesca Chiotti (None, Italy)

11:50 Human Reliability in Critical Space Missions: a Comparative and Integrated HRA Approach
Francesco Ventura (CROWN GROUP INC, Italy); Jr James (CROWN GROUP, USA); Giuseppe Caristi (University of Messina, Italy); Daniela Barba (QBM, Italy)

12:10 UAVs Fleets for Emergency Management in Smart Cities: an Ant Colony Optimization Based Mission Planner
Salvatore Rosario Bassolillo and Egidio D'Amato (University of Naples Parthenope, Italy); Immacolata Notaro (University of Campania Luigi Vanvitelli, Italy)

- 12:30 Towards a Unified Model for Operational Flight Failures Analysis**
Michele Buonsanti (University of Reggio Calabria, Italy); Andrea Montefusco (Luiss Business School, Italy)
- 12:50 A Pattern Recognition Approach to Kinodynamically Feasible Trajectory Planning for Uncertain Vehicles**
Vito Antonio Nardi and Mariacarla Lugarà (University Mediterranea of Reggio Calabria, Italy)

11:30 - 12:50 Sala Italo Balbo
Session 1.2 - Advances in GNSS jamming and spoofing mitigation techniques
Chairs: Alfonso Farina, *Selex-ES (retired), Italy*
Danilo Orlando, *University of Pisa, Italy*
Salvatore Ponte, *University of Campania "L. Vanvitelli", Italy*

- 11:30 ASPIS: A Comprehensive AI-Powered GNSS anti-Spoofing Solution for Modern Robust PNT Systems**
Franco Gottifredi, Andrea Basciu and Joseph Locantore (WAY4WARD, Italy); Luca Cucchi and Andrea Piccolo (Joint Research Centre European Commission, Italy)
- 11:50 FIPM-RDAM: A Fast Interior-Point Method for Reweighted Decoupled Atomic-Norm Minimization**
Yiding Gao (University of Chinese Academy of Sciences, China); Min Wu (Xidian University, China); Hui Liu (Institute of Acoustics, Chinese Academy of Sciences, China); Chengpeng Hao (Chinese Academy of Sciences, China); Danilo Orlando (University of Pisa, Italy); Yongqing Wu (Institute of Acoustics, Chinese Academy of Sciences, China)
- 12:10 A Methodological Framework for Effective GNSS RFI Localization Using LEO SDR Platforms**
Luca Morichi, Alex Minetto, Simone Zocca and Fabio Dovis (Politecnico di Torino, Italy)
- 12:30 Electromagnetic Warfare Overview**
Ten. Raffaele Pezone, Italian Army

11:30 - 13:30 Sala del Gioco
Session 1.3 - General Session - PART I
Chair: Luca De Vito, *University of Sannio, Italy*

- 11:30 A Knowledge Graph-Based Approach to Designing Educational Cybersecurity Games**
Edoardo Polimeno (University of Salento, Italy); Vita Santa Barletta (University of Bari, Italy); Christian Catalano (University of Bari Aldo Moro, Italy)
- 11:50 A New Concept of Airless near-Wheel Motor with Skids for All-Terrain Mobility**
Mauro Velardocchia and Antonio Tota (Politecnico di Torino, Italy)

- 12:10 Autonomous Ocean Sensor Platform for Monitoring of Critical Infrastructure**
Kasper Mayntz Paasch (University of Southern Denmark & Philon Engineering ApS, Denmark); William Greenbank (Centre for Industrial Electronics, Denmark); Michael Linden-Vørnle (DTU Space, Denmark); Jerome Jouffroy (Centre for Industrial Mechanics, University of Southern Denmark, Denmark); Jonas Studsgaard Nielsen (University of Southern Denmark, Denmark)
- 12:30 From UAV-Based Sensing to Digital Twin Updating: A Traceable Framework for Aircraft Defect Inspection**
Carlotta Fontana (University of Salerno, Italy); Giovanni Baglivo, Rosario Giordano and Gianmarco Concilio (Proetico srl, Italy); Nicola Cappetti (University of Salerno, Italy)
- 12:50 From Land to Water: MAR's Role in Future Military Missions**
Eduardo De Francesco, SeTeL
- 13:10 Results of the CECASP PNRM (Research Project on AI Applied to Cyber Security, with Automated Security Testing)**
Captain Gianluca Maria Marcelli (Italian Navy), Prof. Mauro Andreolini (University of Reggio Emilia)

13:10 - 14:10 *Casa dell'Aviatore - First Floor*
LUNCH

14:15 - 16:15 *Sala Francesco Baracca*
ROUND TABLE - Cybersecurity and AI: Strengthening Defense and Ensuring the Security of Our Country
Chair: Giovanni Savoldelli Pedrocchi, *AFCEA - Chapter of Naples*

PANELLISTS:

Alfonso Farina - *Ph.D. H.C., Selex-ES, Rome (retired)*

Cybersecurity must be exercised in a non-Euclidean world

Salvatore Ponte - *University of Campania "L. Vanvitelli"*

Building Resilience in the Digital Age: a Cybersecurity Curriculum for Engineers and Defense Operators

Christian Giusti - *Head of Artificial Intelligence & Big Data Technologies - LEONARDO*

AI-based signal processing: towards the next generation of Cognitive Sensors

LT. Col. Michele D'Amore - *Italian Air Force*

Artificial Intelligence in the Italian Air Force: an Overview

Paolo Pari - *DIGISKY*

New Aerospace Technologies to strengthen Defense Security

Angelo Giuliana - *Meditech Competence Center*

From Key to Photon: Integrating Post-Quantum Cryptography and Quantum Key Distribution in Defence Communications Security

Col. Giovanni Chessari - *Italian Army*

Italian Army in the Counter-Drone race

Michele Cortese - *AKRON C4SEC*

AKRON C4SEC Solutions for Quantum Resistant Hardware Encryption

Domenico Soriano - *MAREGROUP*

How the I.A. can support Security Defense as digitalization of the Information

CV Gianluca Maria Marcilli - *Navy General Staff, Technological Innovation Office*

Italian Navy: Cybersecurity and AI projects

16:15 - 16:30

Casa dell'Aviatore - First Floor

COFFEE BREAK

PS01 Applying Discrete Event Simulation to Optimize Hospital Operations During a Pandemic

Diellza Berisha (Bulgarian Academy of Sciences, Bulgaria & UBT - Higher Education Institution, Kosovo)

PS02 Enhancing Radio Frequency-Based Drone Signal Classification in Low-SNR Scenarios Using Graph Spectral Filtering and Feature Fusion

Seungik Cho (Rice University, USA)

PS03 Machine Learning-Based Detection of Microarchitectural Attacks on RISC-V via Gem5

Alessandro Palumbo (CentraleSuPélec, Inria, CNRS, IRISA, France)

PS04 Real-Time Modeling of Soft Soil-Tire Interaction Using a Map-Based Approach

Andrea Pinter, Angelo Domenico Vella, Antonio Tota and Mauro Velardocchia (Politecnico di Torino, Italy)

PS05 Quantum Optimised Beam Allocation with a Radar Network for Multiple Target Tracking

Benjamin Rodrigues de Miranda (Deutsches Zentrum für Luft- und Raumfahrt, Germany & Hensoldt, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Sigurd Huber (German Aerospace Center (DLR), Germany); Tobias Brosch (Hensoldt Sensors GmbH, Ulm, Germany); Johannes Pardey (Hensoldt Sensors GmbH, Germany); Gerhard Krieger (DLR, Germany); Johannes Hauff (Hensoldt Sensors GmbH, Germany)

PS06 ECCM Strategies for Target Detection in the Presence of Chaff

Pia Addabbo (University of Sannio, Italy); Domenico Barilone and Fausto Iannazzo (MBDA Italia, Italy); Danilo Orlando (University of Pisa, Italy)

PS07 A Hybrid NLP-Epidemiological Model for Fake News Network: BigBird-Assisted SEIZ Modeling with Approximate Bayesian Computation

Kristel Bozhiqi (Uamd, Albania)

PS08 An iForest-Based - Digitalisation Framework for Energy Infrastructure Cyber Protection

Olga Degtiareva (Odessa National Economic University, Ukraine); Stanislav Horbachenko and Olena Chepurna (National University Odesa Low Academy, Ukraine); Natalia Shyriaieva (National Technical University Kharkiv Polytechnic Institute, Ukraine); Tetiana Kuklinova (Odessa National Economic University, Ukraine)

PS09 Decentralized Control of Mesh Networked Multirotor UAV Group

Maciej Kurenda and Konrad Wojtowicz (Military University of Technology, Poland); Krzysztof Sibilski (Air Force Institute of Technology, Poland)

PS10 The Revival of the Wing-in-Ground Craft and Its Potential for EU Defence Purposes

Paola Fratantoni (Zanasi & Partners, Italy); Maria Ustenko (Zanasi and Partners, Italy)

PS11 An Improved Compressive Sampling-Based Method for Channel Estimation

Ram Prasad Kusi (Nepali Army, Nepal); Nishchal Acharya (Tribhuvan University, Nepal); Eulalia Balestrieri, Pasquale Daponte and Luca De Vito (University of Sannio, Italy)

16:30 - 18:30

Sala Francesco Baracca

Session 2.1 - Advanced Integration of Defense Systems and Flight Security: Methods and Technologies - PART II

Chairs: Michele Buonsanti, *University of Reggio Calabria, Italy*
Alessia Ferraro, *University of Reggio Calabria, Italy*
Valerio Scordamaglia, *University of Reggio Calabria, Italy*

16:30 A Possible Support from Intelligence Systems to the Basic Flight Training

Michele Buonsanti and Giovanni Leonardi (University of Reggio Calabria, Italy); Daniela Musarella (Mediterranean University, Italy)

16:50 Evidence-Based-Training (EBT) as a New Paradigm in Commercial Pilot Training

Michele Buonsanti (University of Reggio Calabria, Italy); Giuseppe Pino Borgna (Università Giustino Fortunato, Italy)

17:10 Leveraging Commercial Generative AI Solutions for Aviation Safety Risk Management

Massimo Paradisi (Higher Institute for Flight Safety, Italy)

17:30 In-Scene Atmospheric Estimation and Compensation in MWIR "Blue" and "Red" Multispectral Thermal Imagery for Missile Warning Application

Umberto Maria Astarita (Italian Air Force, Italy); Giuseppe Masi and Silvia Bernoldi (Leonardo S.p.A., Italy); Elia Leonetti and Alessio Buttazzo (Italian Air Force, Italy)

17:50 In-Scene Atmospheric Estimation and Compensation in MWIR and LWIR Multispectral Imagery for Missile Warning Applications

Ilaria Canfora (Italian Air Force, Italy); Giuseppe Masi and Silvia Bernoldi (Leonardo S.p.A., Italy); Elia Leonetti and Alessio Buttazzo (Italian Air Force, Italy)

18:10 Analytical Implementation to Flight Accident Reactive Analysis

Michele Buonsanti, Francis Cirianni and Giovanni Leonardi (University of Reggio Calabria, Italy)

16:30 - 18:30

Sala Italo Balbo

Session 2.2 - Resilient Autonomy: Coordinated Control and Intelligence in Multi-Agent Robotic Systems for Defense Applications

Chairs: Salvatore Rosario Bassolillo, *Parthenope University of Naples, Italy*

Mariacarla Valeria Lugarà, *University of Reggio Calabria, Italy*

Vito Antonio Nardi, *University of Reggio Calabria, Italy*

16:30 A Beacon Based Solution for Autonomous UUVs GNSS-Denied Stealthy Navigation

Alexandre Albore (ONERA, France & Université de Toulouse, France); Humbert Fiorino and Damien Pellier (Université de Grenoble Alpes, France)

16:50 CHEMSYS Project: Set-Theoretic Methods for Multi-Robot System Coordination in USAR

Alessia Ferraro (University of Reggio Calabria, Italy); Egidio D'Amato (University of Naples Parthenope, Italy); Valerio Scordamaglia (University of Reggio Calabria, Italy)

17:10 Universal UGV Target Tracking via Image Analysis and Neural Network-Based Control

Michał Siwek and Jarosław Panasiuk (Military University of Technology, Poland)

17:30 Scalable Coordinated Control of UAV Swarms: A Null Space Behavioral Approach for SAR Missions

Alessia Ferraro and Valerio Scordamaglia (University of Reggio Calabria, Italy); Francesca Boem (University College London, United Kingdom (Great Britain))

17:50 An Adaptive and Resilience-Preserving Peer-to-Peer IoT Network for Wildfire Monitoring

Marco Garofalo (Università Degli Studi di Messina, Italy); Giuseppe Tricomi and Pasquale De Meo (University of Messina, Italy); Giovanni Merlino (University of Messina & National Interuniversity Consortium for Informatics (CINI), Italy); Francesco Longo and Antonio Puliafito (University of Messina, Italy)

18:10 Deviceless Edge-Centric Architectures for Serverless ML Workloads Deployment

Fabio Orazio Mirto, Marco Passaniti, Giuseppe Tricomi and Luca D'Agati (University of Messina, Italy); Giovanni Merlino (University of Messina & National Interuniversity Consortium for Informatics (CINI), Italy)

16:30 - 18:30

Sala del Gioco

Session 2.3 - Target Recognition for Radar and IAMD Systems

Chairs: Adam Kawalec, *Military University of Technology, Poland*
Witold Bużantowicz, *Military University of Technology, Poland*
Ksawery Krenc, *Military University of Technology, Poland*

- 16:30 Cruise Missile Threat Modeling for Tactical-Level Air Defense Simulator**
Witold Bużantowicz and Jakub Majchrowicz (Military University of Technology, Poland); Krystian Żmieńko (1st Armoured Brigade, Poland)
- 16:50 A Radar Cross-Section Analysis of a Close Air Support Aircraft in Selected Combat Configurations**
Witold Bużantowicz and Aurelia Adamczak (Military University of Technology, Poland)
- 17:10 Benchmark Algorithms for Threat Priority Estimation in Tactical-Level Air Defense Simulation System**
Ksawery A Krenc and Witold Bużantowicz (Military University of Technology, Poland)
- 17:30 Analysis of the Impact of Atmospheric Conditions on the Performance of anti-Radiation Missiles**
Jakub Dyjak, Marta Walencykowska and Adam Kawalec (Military University of Technology, Poland)
- 17:50 Enhancing MANPADS Operator Training Through Augmented Reality: Improving Air Target Recognition Skills**
Natalia Daniel, Jerzy Kaczorowski, Kamil Klicki and Witold Bużantowicz (Military University of Technology, Poland)
- 18:10 System Engineering, Modelling and Designing Hardware-in-the-Loop Echo Signal Generation and Integration with CW Fire Control Radar**
Stanisław Adam Grzywiński, Stanisław Żygadło, Piotr Turek and Mateusz Kaszyński (Military University of Technology, Poland)

19:00 - 20:00

Casa dell'Aviatore - Sala Soci

WELCOME PARTY

Technical Program - Thursday, October 6

08:30 - 17:00 *Casa dell'Aviatore - First Floor*

REGISTRATIONS

09:00 - 10:40 *Sala Francesco Baracca*

Session 3.1 - General Session - PART II

Chair: Ruggero De Francesco, *SeTeL, Italy*

- 09:00 Modeling Transistor Growth: Moore's Law Revisited Exploiting the Golden Ratio**
Alfonso Farina (Leonardo Company Consultant, Italy); Luigi Bibbo (University Mediterranea of Reggio Calabria, Italy); Salvatore Ponte (University of Campania "L. Vanvitelli", Italy); Francesco C Morabito (University Mediterranea of Reggio Calabria, Italy)
- 09:20 Statistical Analysis of X-Band Sea Clutter with and Without Motion Compensation**
Nagarakshith Reddy Mungara and Alessio Balleri (Cranfield University, United Kingdom (Great Britain)); Leon Kocjancic, Giovanni Marino and Tim Acland (Hensoldt, United Kingdom (Great Britain))
- 09:40 Information Theory, Stochastic and Entropic Processes to Try to Understand Alzheimer's Disease Onset**
Alfonso Farina (Leonardo Company Consultant, Italy); Giovanni B. Palmerini (Sapienza Università di Roma, Italy); Salvatore Ponte (University of Campania "L. Vanvitelli", Italy); Francesco De Angelis (Sapienza Università di Roma, Italy); Stefano Carletta (Sapienza University of Rome, Italy); Francesco C Morabito (University Mediterranea of Reggio Calabria, Italy)
- 10:00 TOA and TDOA-Based Passive Localization Using AIS Signals for Maritime Surveillance**
Massimo Marrazzo and Vincenzo Carotenuto (University of Naples Federico II, Italy); Antonio De Maio (University of Naples "Federico II", Italy); Luca Pallotta (University of Basilicata, Italy)
- 10:20 Error Management in Cross-Domain Maritime Ad-Hoc Networks**
Konstantin Brandl (Carl Von Ossietzky Universität Oldenburg, Germany & Atlas Elektronik GmbH, Germany); Hanno Gooß (TKMS Atlas Elektronik GmbH, Germany); Axel Hahn (University of Oldenburg & OFFIS, Germany)

09:00 - 10:45

Sala Italo Balbo

Session 3.2 - Non-invasive monitoring of psychophysiological states of military personnel during operation and training

Chairs: Arcangelo Merla, *University "G. d'Annunzio" of Chieti-Pescara, Italy*

Gianluca Borghini, *Sapienza University of Rome, Italy*

Vincenzo Ronca, *Sapienza University of Rome, Italy*

Guilherme Hilgert Elçadi, *Swedish Defense Research Agency, Sweden*

- 09:00 Mitigating Stress and Cognitive Impairment in Airline Pilots Through Biomarkers**
Giacomo Belloni (United Arab Emirates); Francesca Antonella Aiello (Math Biology srl, Italy)
- 09:15 Every Breath You Take - Preliminary Test Results of Fighter Pilots' Within-Breath Monitoring System**
Karoliina Messo (Insta ILS Oy, Finland); Heikki Mansikka (National Defence University, Helsinki, Finland)
- 09:30 Unobtrusive Monitoring of Attention and Mental Workload Through Facial Video in Simulated Operational Scenarios**
Vincenzo Ronca, Pietro Aricò, Gianluca Di Flumeri, Andrea Giorgi, Rossella Capotorto and Alessia Ricci (Sapienza University of Rome, Italy); Fabio Babiloni (University of Rome Sapienza, Italy); Gianluca Borghini (Sapienza University of Rome, Italy)
- 09:45 Assessing Cognitive States of Pilots in Commercial Aviation Relying on Physiological Signals**
Eliezer Zahid Gill, Alessia Amelio and Daniela Cardone (University of Chieti-Pescara, Italy)
- 10:00 Enabling Fighter Pilot Assistance: A Review on the Latest Advancements in Pilot Cognitive Workload Monitoring**
Michele Tritto (Next2U, Italy); Valeria Fasson (Leonardo Spa, Italy); Ludovica Di Pompeo and Arcangelo Merla (Next2U Srl, Italy); Marco Fabbri (Leonardo Spa, Italy)
- 10:15 Noninvasive Detection of Cognitive Load: A Thermal Imaging Study of Stress and Fatigue in a Simulated Aeronautic Environment**
Michele Giuseppe Di Cesare and Francesco Romano (University G. d'Annunzio of Chieti-Pescara, Italy); Vittoria Casaccia and Ludovica Di Pompeo (Next2U Srl, Italy); Michele Tritto (Next2U, Italy); Daniela Cardone (University of Chieti-Pescara, Italy); Arcangelo Merla (University G. d'Annunzio of Chieti-Pescara, Italy)
- 10:30 CEMATA- Project TORNADO**
Ten. Col. Tommaso Carbotti, Italian Air Force

09:00 - 10:40

Sala del Gioco

Session 3.3 - Agentic AI and Strategic Synthesis for Next-Generation Defense Systems

Chair: Uwe Borghoff, *University of the Bundeswehr Munich, Germany*

- 09:00** **Artificial Intelligence for CBRN Threat Detection: Emerging Opportunities and Challenges for Law Enforcement and Security Practitioners**
Maria Ustenko (Zanasi and Partners, Italy); Giulia Venturi (Zanasi & Partners, Italy)
- 09:20** **DARSA-Lambda: Formalizing Network Interactions and Behaviors to Enhance Cybersecurity**
Emiliano Casalicchio (Sapienza University of Rome, Italy); Roberto Tacconi, Daniele Francesco Ali and Stefano Landucci (Fincantieri, Italy)
- 09:40** **Metacognitive AI Model for Target Engagement in Military Operations**
Clara Maathuis (Open Universiteit, The Netherlands)
- 10:00** **Answering Aerospace Military Doctrinal and Regulatory Questions with RAG and LLMs**
Nicolás Díaz (Universidad de los Andes, Colombia); Juan Diego Ortega-Medina (Universidad de los Andes, Colombia & Amadeus IT Group, Colombia); Kalia Angelica Gonzalez (Ande's University, Colombia); Mario Linares-Vásquez and Rubén Manrique (Universidad de los Andes, Colombia); Alexandra Zabala-López (Colombian Aerospace Force, Colombia)
- 10:20** **Guarded Swarms: Hybrid Digital-Analog Coordination for AI-Robot Systems**
Uwe Borghoff (University of the Bundeswehr Munich, Germany); Paolo Bottoni (Sapienza - University of Rome, Italy); Remo Pareschi (University of Molise, Italy)

10:40 - 11:00 *Casa dell'Aviatore - First Floor*
COFFEE BREAK / POSTER SESSION

11:00 - 11:40 *Sala Francesco Baracca*
PLENARY SESSION - KEYNOTE LECTURE
Chair: Pasquale Daponte, *University of Sannio, Italy*

Technology Innovation Through Experimentation in the Indo-Pacific Region

Jeffrey Newcamp

PhD, USAF, Deputy Science & Technology Advisor, USINDOPACOM J8

11:40 - 13:20 *Sala Francesco Baracca*
Session 4.1 - Radar Electronic Attack and Electronic Protection
Chairs: Alessio Balleri, *Cranfield University, UK*
Aled Catherall, *Plextek Ltd*
Raffaele Fiengo, *Emerson NI*

- 11:40 Assessment of Adaptive Target Detection Performance Against Jamming with Hardware-in-the-Loop**
Matteo Bisegna (Cranfield University, United Kingdom (Great Britain)); Massimo Rosamilia (University of Naples Federico II, Italy); Alessio Balleri (Cranfield University, United Kingdom (Great Britain)); Antonio De Maio (University of Naples "Federico II", Italy)
- 12:00 Deep Learning Techniques for Non-Cooperative Geolocation in Urban Environments**
Chayapa Charoencholwanich and Alessio Balleri (Cranfield University, United Kingdom (Great Britain)); Aled Catherall (Plextek, United Kingdom (Great Britain))
- 12:20 Scaling Phase-Conjugating Cross-Eye Jamming: A Multi-Loop Approach**
Vittorio Calligaris (Sapienza University of Rome, Italy & Italian Air Force, Italy); Pierfrancesco Lombardo (University of Rome La Sapienza, Italy)
- 12:40 Hybrid False Target Jamming for LPI Radar Suppression via Optimized Signal Design**
Hemanga Banerjee and Carmine Clemente (University of Strathclyde, United Kingdom (Great Britain)); Mark Osborne (DSTL, United Kingdom (Great Britain))
- 13:00 Jammer Versus Radar in a Cognitive Electronic Warfare Environment**
Alex Hiles, Daniel Harrold, Sam Slade and Bashar I. Ahmad (BAE Systems, United Kingdom (Great Britain))

11:40 - 13:00

Sala Italo Balbo

Session 4.2 - ISaCAGE - FLARE: Integration and coexistence of sensing and communication systems that share the same spatial and spectrum resources

Chair: Emanuele Grossi, *University of Cassino and Southern Lazio, Italy*

- 11:40 CFAR Strategies for Adverse ISAC Scenarios**
Danilo Orlando (University of Pisa, Italy); Giuseppe Ricci (Universita' del Salento, Italy)
- 12:00 On Passive Detection and Localization of Hypersonic Vehicles**
Antonio Napolitano (Universita di Napoli Parthenope, Italy)
- 12:20 Exploiting LEO OTFS Signals for High-Speed Target Parameter Estimation**
Tong Ding (Xidian University, China); Luca Venturino and Emanuele Grossi (University of Cassino and Southern Lazio & Consorzio Nazionale Inter-Universitario per Le Telecomunicazioni (CNIT), Italy)
- 12:40 LiDAR-Based Dynamic Blockage Prediction: A Data-Driven Approach for Learning Interactive Bayesian Models**
Saleemullah Memon (University of Genoa, Italy & University Carlos III de Madrid, Spain); Ali Krayani (University of Genova, Italy); Pamela Zontone and Lucio Marcenaro (University of Genoa, Italy); David Martín Gómez (Universidad Carlos III de Madrid, Spain); Carlo S Regazzoni (University of Genoa, Italy)

11:40 - 13:00 *Sala del Gioco*
Session 4.3 - Military Innovation in Education & Technology
Chairs: Cristian-Emil Moldoveanu, *Military Technical Academy Ferdinand I, Romania*
Andrada Livia Cirneanu, *Military Technical Academy Ferdinand I, Romania*

11:40 Chains of Intrusion - Design and Development of an Educational Cybersecurity Game
Edoardo Polimeno and Daniela Zito (University of Salento, Italy); Vita Santa Barletta (University of Bari, Italy); Christian Catalano (University of Bari Aldo Moro, Italy)

12:00 Exploring Multicultural Effectiveness Development in a Blended Intensive Programme in Mathematics for Security and Defence
Alice Barana and Giulia Boetti (University of Turin, Italy); Antonino Cambria (University of Turin and High Defence Study Centre, Ireland); Marina Marchisio Conte (University of Turin, Italy); Enrico Spinello (It-Army Officers School, Italy)

12:20 Neural Network-Based External Ballistics Prediction for Infantry Weapon Systems
Andrada Livia Cirneanu (Military Technical Academy Ferdinand I, Romania); Cristian-Emil Moldoveanu (Military Technical Academy Ferdinand I, Romania); Thomas Leroux (Universite de Toulouse - IUT Toulouse, Romania); Alin Constantin Sava, Pamfil Somoia and Marius-Valeriu Cîrmaci-Matei (Military Technical Academy Ferdinand I, Romania)

12:40 Integrating Mathematical Models and Informatics in Military Education: A MATLAB Approach to Exterior Ballistics
Cristian-Emil Moldoveanu (Military Technical Academy Ferdinand I, Romania); Andrada Livia Cirneanu, Alin Constantin Sava and Pamfil Somoia (Military Technical Academy Ferdinand I, Romania)

13:00 - 14:30 *Casa dell'Aviatore - First Floor*
LUNCH

14:30 - 16:10 *Sala Francesco Baracca*
Round Table: Innovation and Entrepreneurship in Defense Technologies
Moderator: Marco Giordani, *University of Padova, Italy*

PANELISTS

Filippo **Campagnaro**, *SubSeaPulse S.R.L.; Assistant Professor at the University of Padova*

Gianluca **Borghini**, *Brainsigns*

Lorenzo **Vulpio**, *Ancharia S.R.L.*

14:30 - 16:10

Sala Italo Balbo

Round Table - New Technologies for Security and Defence: Ethical-Legal and Political Challenges in International Cooperation

Prof.ssa Daniela **Irrera** - *Centro Alti Studi Difesa, Full Professor of Political Science*

Political constraints to cooperation in defence and security at the European level

Prof. Nicola **Colacino** - *Centro Alti Studi Difesa, Associate Professor of International Law*

AI and Cognitive Influence: Beyond Information Warfare

Prof. Ranieri **Razzante** - *University of Perugia, Advisor of the Antimafia Commission of the Italian Parliament*

Cybersecurity and cooperation in the European context

Prof. Christiancarmine **Esposito**, *University of Salerno, Associate Professor of Informatics*, Prof. Lucilla **Gatt**, *University of Naples Suor Orsola Benincasa, Full Professor of Private Law and New Technologies Law*

Ethical-legal assessment in the adoption process of new security and defence technologies

Prof. Rita **Mazza** - *University of Naples "Federico II", Full Professor of International Law*

Limits to security and defence exclusion from the CoE Convention on AI: the issue of dual-use activities and hybrid warfare

Prof.ssa Fiorella **Battaglia** - *University of Salento, Associate professor of Philosophy*

As AI transforms security and defense, what character and values do we want our institutions and defense actors to represent?

14:30 - 15:50

Sala del Gioco

Special Session #8 - Technology of the Arts of Intellect and the resulting risks for diplomatic activity

Chairs: Plamen Teodosiev, Stefan Markov, Emil Lyutskanov, *University of Library Science and Information Technology, Bulgaria*

14:30 Artificial Intelligence as Advisor, Analyst and Mediator in Diplomacy: Potential, Limitations and Risks

Plamen Penkov Teodosiev, Stefan Nikolaev Markov and Kristian Ivanov Petrov (University of Library Studies and Information Technologies, Bulgaria)

14:50 Legal Framework, Regulatory Approaches and the Application of Artificial Intelligence in Diplomatic Practice

Plamen Penkov Teodosiev (University of Library Studies and Information Technologies, Bulgaria); Daniela Pavlova (UNIBIT, Bulgaria); Ivanka Pavlova (UNIBIT, Bulgaria); Pavlina Nikolova (Deface Institute, Bulgaria); Emil Lyutskanov and Panayot Gindev (UNIBIT, Bulgaria)

15:10 Artificial Intelligence Technology and the Consequential Risks for Diplomatic Activities
Pavlina Nikolova (Deface Institute, Bulgaria); Plamen Penkov Teodosiev and Stefan Nikolaev Markov (University of Library Studies and Information Technologies, Bulgaria); Svetlana Syarova and Daniela Pavlova (UNIBIT, Bulgaria)

15:30 Human Agency and Accountability in AI-Augmented Diplomacy
Lyubomir Gotsev (University of Library Studies and Information Technologies, Bulgaria); Plamen Penkov Teodosiev (University of Library Studies and Information Technologies, Bulgaria); Daniela Pavlova (UNIBIT, Bulgaria)

16:10 - 16:30 Casa dell'Aviatore - First Floor
COFFEE BREAK / POSTER SESSION

16:30 - 18:30 Sala Francesco Baracca
Session 5.1 - Emerging Defense Technologies in Latin America: Innovation, Challenges, and Regional Cooperation
Chair: Mario Linares Vasquez, *Universidad de los Andes, Colombia*

16:30 Eyes in the Sky: Deep Learning Processing of Airborne Sensor Imagery for Environmental Monitoring in the Colombian Amazon
Tomas Acosta-Bernal (Universidad de los Andes, Colombia & Konecto, USA); Samuel Romero, Juan A Carrasquilla, Juan P Reyes, Haydemar M Núñez and Mario Linares-Vásquez (Universidad de los Andes, Colombia); Alexandra Zabala-López (Colombian Aerospace Force, Colombia)

16:50 An Automated System for the Detection and Neutralization of Commercial Drones in Terrorist Scenarios
Manuela Pacheco Malagón, Raul Santiago Rincon Corba, Carlos Andres Lozano-Garzon and Nicolas Segura Castro (Universidad de Los Andes, Colombia)

17:10 Digital Manufacturing Pathways for Prosthetic Socket Innovation
Juan S Salgado and Christian J Cifuentes-De La Portilla (Universidad de los Andes, Colombia)

17:30 DDS-Enabled Remote Weapon Stations: A Data-Centric Approach to Real-Time Servo Control and Combat System Integration
Mervin Jesus Sosa Borrero (Universidad Tecnológica de Bolívar, Colombia & Centro Desarrollo Tecnológico Naval, Colombia); Cristian Jiménez Barrera (Universidad Tecnológica de Bolívar, Colombia); Edwin Puertas (Universidad Tecnológica de Bolívar, Colombia); Keneth Alexis Bravo Paz (Universidad de los Andes, Colombia)

17:50 Applied Mechanics for Progression Prediction of Idiopathic Scoliosis in Young Members of the Military Force
David Felipe Landinez León (Universidad de los Andes, Spain & Universidad de Zaragoza, Spain); Javier Bayod (Universidad de Zaragoza, Spain); Juan S Salgado and Christian J Cifuentes-De La Portilla (Universidad de los Andes, Colombia)

18:10 Artificial Intelligence in the Security and Defense of Latin American States Against Hybrid and Transnational Threats

Carlos Alberto Gonzalez Palacios (Centro de altos Estudios Nacionales, Peru); Gabriel Ronal Gonzales Caceres, Vanessa Yaniz Palomino Monteza and Galvez Castro Roberto Manuel (Centro de Altos Estudios Nacionales, Peru); Felix José Diaz (Centro de altos Estudios Nacionales, Peru); Elsa Sulay Paz Sotero (Centro de Altos Estudios Nacionales, Peru)

16:30 - 18:30

Sala Italo Balbo

Session 5.2 - Ethics, Law & Politics of Technologies for Defense and Security

Chairs: Ilaria Amelia Caggiano, *University of Naples Suor Orsola Benincasa, Italy*

Valentina Casola, *University of Napoli Federico II, Italy*

16:30 Cognitive Warfare and Human Enhancement Through Neurotechnological Devices: An Ethical and Legal Perspective

Ilaria Amelia Caggiano (Università Degli Studi Suor Orsola Benincasa, Italy); Lucilla Gatt (University Suor Orsola Benincasa, Italy); Anita Mollo (UNISOB, Italy); Emiliano Troisi and Luigi Izzo (University of Naples Suor Orsola Benincasa, Italy)

16:50 Algorithmization of Defense-Related Operations Using Ricardian Smart Contracts: Risks and Mitigation

Christian Esposito (University of Salerno, Italy); Maria Cristina Gaeta (Università Degli Studi Suor Orsola Benincasa, Italy); Emiliano Troisi (University of Naples Suor Orsola Benincasa, Italy)

17:10 The Exploitation of Quantum Technologies in Defense: Legal and Ethical Implications

Christian Esposito and Giovanni Maria Riccio (University of Salerno, Italy); Ilaria Amelia Caggiano and Lucilla Gatt (Università Degli Studi Suor Orsola Benincasa, Italy)

17:30 A Methodological Review on Legal and Ethical Aspects of Attack and Defense Strategies in Cyber Warfare

Christian Esposito (University of Salerno, Italy); Carlo Lando (IPS, Italy)

17:50 Strategic Autonomy and Human Agency in the Age of Military Artificial Intelligence

Michael Romei de Socio, Giorgio Volta and Alessio Merlo (CASD - School of Advanced Defense Studies, Italy)

18:10 The Algorithmic Battlefield: Navigating the Ethical, Legal, and Political Frontiers of AI in Modern Defense and Security

Giorgio Volta, Michael Romei de Socio and Alessio Merlo (CASD - School of Advanced Defense Studies, Italy)

16:30 - 18:30

Sala del Gioco

Session 5.3 - General Session - PART III

Chair: Pasquale Daponte, *University of Sannio, Italy*

- 16:30 2-Watts 71GHz Power Amplifier Module for 10-Gbps Radio Link**
Alberto Colzani (SIAE Microelettronica, Italy); Mohammad Amin Navakpour (SIAE microelettronica, Italy); Matteo Angelo Fumagalli and Alessandro Fonte (SIAE Microelettronica, Italy); Christian Friesicke (Fraunhofer IAF, Germany)
- 16:50 Development and Test of a Microchannel Based Heat Sink Cooling System for Unmanned Aerial Vehicles**
Tomas Calapez (Instituto Superior Tecnico University of Lisbon, Portugal); Pedro Pontes (IN+ - Instituto Superior Técnico, Universidade de Lisboa, Portugal); Joao Torres (CINAMIL Portuguese Military Academy, Portugal); Ana Moita (IN+ - Instituto Superior Técnico, Universidade de Lisboa, Portugal)
- 17:10 A Scalable IoT-Based Water Quality Monitoring for Multi-Pond Aquaculture Using Solar Power**
Pijitra Jomsri (Suan Sunandha Rajabhat University, Thailand); Dulyawit Prangchumpol (Rajabhat Suan Sunandha University, Thailand)
- 17:30 Smart Residential Air Quality Monitoring Using ESP-Mesh and Solar-Powered PM2.5 Sensor**
Dulyawit Prangchumpol (Rajabhat Suan Sunandha University, Thailand); Pijitra Jomsri (Suan Sunandha Rajabhat University, Thailand)
- 17:50 Tensor Modeling of Zero-Sum Games with Applications on N-Party Pursuer-Evader Games**
Stefano Carletta (Sapienza University of Rome, Italy); Alfonso Farina (Leonardo Company Consultant, Italy); Giovanni B. Palmerini and Francesco De Angelis (Sapienza Università di Roma, Italy)
- 18:10 Flight Experiment of Indoor Drone Cooperative Mission Operation Assisted by Advanced AI-Based Visual Navigation**
Fausta Mattei (University of Study of Naples Federico II & University of Bergamo, Italy); Claudia Conte (University of Naples Federico II, Italy); Flora Amato (Università degli Studi di Napoli Federico II, Italy); Domenico Accardo (Università degli Studi di Napoli FEDERICO II, Italy); Alessandro Tenaglia (University of Rome Tor Vergata, Italy); Giona Ragnoli (Italian Air Force, Italy); Mattia Fonisto (University of Naples Federico II, Italy); Daniele Carnevale and Roberto Masocco (University of Rome Tor Vergata, Italy); Simone Mattogno (University of Tor Vergata, Italy); Lorenzo Bianchi (University of Rome Tor Vergata, Italy); Vittorio Calligaris (Sapienza University of Rome, Italy & Italian Air Force, Italy); Raffaele Quartucci (Italian Air Force, Italy)

20:00

Casa dell'Aviatore - Sala Soci

GALA DINNER

Technical Program - Friday, October 7

09:00 - 15:00 *Casa dell'Aviatore - First Floor*
REGISTRATIONS

09:30 - 10:50 *Sala Francesco Baracca*
Session 6.1 - Young Researchers Activities in Technologies for Defense and Security - PART I
Chairs: Matteo Ciotola, *University of Naples Federico II, Italy*

09:30 Balancing Tactical Response and Strategic Coverage in Multi-UAV Convoy Surveillance
Federico Corò (University of Padova, Italy)

09:50 Challenges of ArtWork Protection in Institutional Art Storage and Transportation
László Lórinçz and Gabor Kiss (Obuda University, Hungary)

10:10 Enlarging Lawful Interception Capabilities with Control-Plane Analysis for User Activity Detection
Ingrid Huso (Politecnico di Bari, Italy & CNIT, Italy); Enrico Boffetti, Giuseppe Piro and Gennaro Boggia (Politecnico di Bari, Italy)

10:30 Adversarial Training for Battlefield Defensive Trustworthy AI: An Automotive Case Study for Multi-Domain Cyber Social Threat Intelligence
Vita Santa Barletta (University of Bari, Italy); Danilo Caivano (Università di Bari, Italy); Gabriel Cellammare (University of Bari Aldo Moro, Italy); Samuele del Vescovo (IMT School for Advanced Studies Lucca, Italy); Massimiliano Morga (SER&P - Spin-off of University of Bari Aldo Moro, Italy); Annita Larissa Sciacovelli (University of Bari Aldo Moro, Italy)

09:30 - 10:30 *Sala del Gioco*
Session 6.2 - IEEE Women in Engineering with Focus in Cybersecurity and AI - PART I
Chairs: Galia Marinova, *Technical University-Sofia, Bulgaria*
Vassil Guliashki, *Bulgarian Academy of Sciences, Bulgaria*

09:30 Contribution AI, Cybersecurity, and Gender Bias- Towards Inclusive and Ethical Defenses in the Era of Generative AI
Florence Sedes (University Toulouse 3, France & IRIT, France)

09:50 Review on Hardware Logical Encryption
Eriselda Malaj (Technical University Sofia, Bulgaria); Galia Marinova (Technical University of Sofia, Bulgaria & Technical University-Sofia, Bulgaria)

10:10 **Algorithmic Framework for Evaluating Hardware Encryption Circuits**
Eriselda Malaj (Technical University Sofia, Bulgaria)

10:50 - 11:10 *Casa dell'Aviatore - First Floor*
COFFEE BREAK / POSTER SESSION

11:10 - 11:50 *Sala Francesco Baracca*
PLENARY SESSION - KEYNOTE LECTURE
Chair: Alfonso Farina, *Selex ES, Italy*

Italian Army in the Counter-Drone race

Giovanni Chessari, *Italian Army*

11:50 - 12:50 *Sala Francesco Baracca*
Session 7.1 - Battlefield Operational Technology and Secure Internet of Battlefield Things
Chair: Antonio Mario Caruso, *University of Salento, Italy*

11:50 **Next Generation Private Cellular Network for Defense Applications**
Radheshyam Singh (Technical University of Denmark, Ørstedes Plads, Kgs. Lyngby, Denmark); Gaurav Choudhary (Technical University of Denmark, Denmark); Christian E.L. Madsen (Center of Emergency Communication, Denmark & Technical University of Denmark, Denmark); Christian Kloch (FORCE Technology, Denmark); Michael S. Berger and Nicola Dragoni (Technical University of Denmark, Denmark)

12:10 **Toward Operational Scenario Awareness: A UAV Swarm-Based Framework**
Gianmaria Caprioli (Universidad de Sevilla, Spain); Lorenzo Epifani (Politecnico di Milano, Italy)

12:30 **On the Adversarial ML Risks in Multi-Domain Operations: a Single-Surface/Single-Attack Threat Case Study on Traffic Sign Recognition Systems for Battlefield Automotive Security**
Vita Santa Barletta (University of Bari, Italy); Danilo Caivano (Università di Bari, Italy); Christian Catalano and Mattia Colucci (University of Bari Aldo Moro, Italy); Gennaro Del Campo (SER&Practice, Spin-off of the University of Bari Aldo Moro, Italy); Samuele del Vescovo (IMT School for Advanced Studies Lucca, Italy)

11:50 - 12:30 *Sala del Gioco*
Session 7.2 - Methods, algorithms and solutions for securing energy grids against cyber-attacks
Chair: Giovanna Adinolfi, *ENEA - Italian National Agency for new Technologies, Energy and Sustainable Economic Development, Italy*

- 11:50 Evaluation of Cyber-Vulnerabilities in Commercial Microgrid Devices**
Maria Valenti and Antonio Scafuri (ENEA, Italy); Giovanna Adinolfi (ENEA, Italy & University of Salerno, Italy); Angelo Merola and Giorgio Graditi (ENEA, Italy)
- 12:10 Experimental Implementation of a Quantum Authentication Protocol for Remote Commands to Enhance Cybersecurity in Power Grids**
Alessandro Brighente (University of Padova, Italy); Stefano Cecconello (University of Padova, Italy); Mauro Conti and Alberto De Toni (University of Padova, Italy); Nicola Laurenti (University of Padova, Italy & CNIT, Italy); Stefano Tomasin (University of Padova, Italy); Giuseppe Vallone (University of Padova, Italy); Paolo Villoresi (Università di Padova, Italy)

12:50 - 14:00 *Casa dell'Aviatore - First Floor*
LUNCH

14:00 - 15:20 *Sala Francesco Baracca*
Session 6.1 - Young Researchers Activities in Technologies for Defense and Security - PART II
Chair: Matteo Ciotola, *University of Naples Federico II, Italy*

- 14:00 Motion-Based Individual Identification Using Artificial Intelligence**
Gabor Kiss (Obuda University, Hungary); Sandor Kolozsvari and Csilla Eva Berecz (Óbuda University, Hungary)
- 14:20 The Impact of Digital Propaganda on the Perception of Truth: A Predictive Analysis of Textual Content on Social Media**
Luigi Di Biasi, Serena Lembo and Francesco Vittorio Giovanni Cracas (University of Salerno, Italy)
- 14:40 A Conceptual Framework for Predictive Maintenance in Gamma Irradiation Facilities Using Environmental Data and Easy-to-Use Machine Learning Tools**
Beatrice D'Orsi, Rocco Carcione, Ilaria Di Sarcina, Jessica Scifo, Adriano Verna and Alessia Cemmi (ENEA, Italy)
- 15:00 Acoustic Monitoring of Drone Propeller Integrity Using Symmetrized Dot Pattern**
Valeria Bruschi (Marche Polytechnic University, Italy); Giacomo Peruzzi (University of Padova, Italy); Gianluca Ciattaglia (Università Politecnica delle Marche, Italy); Alessandro Pozzebon (University of Padova, Italy); Susanna Spinsante (Università Politecnica Delle Marche, Italy); Stefania Cecchi (UNIVPM, Italy)

14:00 - 15:20 *Sala del Gioco*
Session 6.2 - IEEE Women in Engineering with Focus in Cybersecurity and AI - PART II
Chairs: Galia Marinova, *Technical University-Sofia, Bulgaria*
Vassil Guliashki, *Bulgarian Academy of Sciences, Bulgaria*

- 14:00 Architecture and Implementation of Lightweight IoT Encryption with Machine Learning-Based Optimization**
Erilda Muka (Canadian Institute of Technology, Albania); Emiliano Mankolli (Polis University, Albania); Galia Marinova (Technical University of Sofia, Bulgaria & Technical University-Sofia, Bulgaria)
- 14:20 Autonomous Intrusion Detection and Tracking Using AI-Driven mmWave Radar and UAS Coordination**
Ledio Zajmi (SKAITECH, Albania); Emiliano Mankolli (Polis University, Albania); Vassil Guliashki (Institute of Information and Communication Technologies - BAS, Bulgaria); Erilda Muka (Canadian Institute of Technology, Albania); Galia Marinova (Technical University of Sofia, Bulgaria & Technical University-Sofia, Bulgaria); Miralda Cuka (New York University of Tirana, Albania)
- 14:40 Real-Time Emotion Adaptation in Humanoid Robots: Implications for Ethical Deployment in High-Sensitivity Contexts**
Sonabayim Huseynzade (TU Dortmund University, Germany & IEEE WIE AG Azerbaijan, Azerbaijan); Yoshio Matsumoto (Tokyo University of Science, Japan); Toshimi Ogawa (Tohoku University, Japan); Rainer Wieching (University Siegen, Siegen, Germany); Yasuyuki Taki (Tohoku University, Japan); Volker Wulf (University of Siegen and Fraunhofer FIT, Germany)
- 15:00 Advanced Techniques for Reconnaissance and Enumeration in Internal Network Security Assessments**
Edmond Hajrizi (University for Business and Technology, Austria); Besnik Qehaja (Technical University of Sofia, Bulgaria); Galia Marinova (Technical University of Sofia, Bulgaria & Technical University-Sofia, Bulgaria); Vassil Guliashki (Institute of Information and Communication Technologies - BAS, Bulgaria); Dion Mulaj (UBT - University for Business and Technology, Kosovo)

15:20 - 15:40 Casa dell'Aviatore - First Floor
COFFEE BREAK

15:40 - 16:00 Sala Francesco Baracca
CLOSING AND AWARD CEREMONY
