

# Andrea Gallegati, Ph.D

## Digital Technology Strategy Specialist @ Leonardo – Cyber & Security Solutions

@ andrea.gallegati.job@gmail.com  
in /andrea-gallegati

+393381077321  
andreaagalle

Rome, IT  
0000-0001-7692-905X



## CERTIFICATIONS AND MEMBERSHIPS

### Docker, Inc – Docker Captain

Nov 2024

- Member of the Docker Captains Program, a community of technical experts and thought leaders who actively shape and promote the Docker ecosystem.
- Advocate for container security best practices and contributor to DevSecOps automation workflows.

### ISC2 – Certified Secure Software Lifecycle Professional (CSSLP)

Jul 2024

- International certification focused on integrating security across the software development lifecycle.
- Secure design, governance of ISMS (e.g., ISO/IEC 27001), risk management, policy development, and compliance with legal and regulatory frameworks (e.g., GDPR, NIS 2).
- Secure architecture, threat modeling, attack types, prevention strategies, and incident response.
- This is an **ANAB accredited (ISO/IEC 17024) certification**, approved by U.S. DoD (8140.03).

### Ordine degli Ingegneri della Provincia di Roma

#### Member of the Cybersecurity Commission (*Commissione Sicurezza Informatica*)

Jan 2023

- This Commission promotes cybersecurity awareness, policy dissemination, and knowledge-sharing initiatives.

### Professional Engineer (PE)

Jan 2019

- Licensed Professional Engineer, with official recognition from the national engineering registry (Credential ID A37845).

## EXPERIENCE

### Leonardo – Cyber & Security Solutions

#### Digital Technology Strategy Specialist

Dec 2025 – Ongoing

Applied R&D within the **Product & Technology Innovation business unit** and PoC development up to TRL 5–6, for demonstration in relevant operational environments. The laboratory acts as a cross-cutting technological enabler.

- Fostering **cross-domain technological synergies** with the Cyber Threat Intelligence, Post-Quantum Cryptography, and Artificial Intelligence laboratories, with a strategic focus on AI-driven security capabilities.
- Designing and prototyping **Zero Trust (ZTA) and data-centric security (DCS) architectures**, secure-by-design cloud and tactical edge solutions, leveraging AI for resilient decision-making **across the cloud-to-edge continuum**.
- Led **technical integration** of recently acquired companies' product portfolios (Axiomatics PDP and the PrivX PAM by SSH), aligning **architectural governance** with the overarching security framework of the SERICS Spoke 9 (Security in Digital Transformation) programme.
- Peer-reviewing scientific papers on **Security and Privacy** matters for international journals and conferences.

Project Management

Peer Review

Cloud

Edge Computing

IoT

Zero Trust

DCS

UEBA

AI

HPC

### IDS AirNav – ENAV Group

#### AI Chapter & Collaborative Design Chapter Member

Mar 2025 – Dec 2025

Bridge internal knowledge gaps and **define the AI Value Proposition** for the organization. Researching and proposing **high-impact AI use cases (RAG, Open-Source LLMs, MCP servers)**, e.g. to automate system log analysis and technical/security documentation (Threat Modeling, Gap Analysis), significantly reducing the extraneous cognitive load of Stream-Aligned Teams.

- Facilitating, providing mentorship and architectural governance to **ensure the responsible adoption of AI** across different business units and enhance overall operational excellence.
- Promoting Collaborative Design tools and methodologies to facilitate **synergies between different groups**, simplifying cross-product integrations and optimizing software architectures.

Artificial Intelligence

RAI

Machine learning

MLOps

Fine Tuning

LLM

RAG

LlamaIndex

MCP servers

## Secure-SDLC Engineer (appointed *Security Champion*)

📅 Mar 2023 – Dec 2025

Support the Product Security Manager by helping implement and uphold policies and procedures, monitor security reports through weekly (SAL) meetings, and **fulfill the annual goals declared in the Security Management Plan**. The Product Security Manager and the Security Champions are the “Competence Center” for the Security domain.

- **Governance & Compliance** – Support the Security Manager on maintaining information-security policies and product baselines aligned. Conduct continuous **gap analysis against OWASP ASVS, GDPR** and track remediation plans.
- **Cyber-Risk & Supply Chain Management** – Run threat and risk assessments on new features (Security by Design) as well as suppliers (SBOM + vendor due-diligence), producing corrective-action reports for the Security Manager.
- **Secure-SDLC Assurance** – Lead threat modelling, dependency analysis and secure-code reviews, and integrate SAST, DAST, IaC scanning and OWASP-dependency-check (SCA), on **four Critical to High Risk Profile products**.
- **Container & Infrastructure Hardening** – Enforce CIS Benchmarks for Docker, CentOS and PostgreSQL with docker-bench-security and Trivy image scans, and collaborate with Ops to deploy solutions on **Hardened Infrastructures**.
- **Metrics & Reporting** – Support the Security Manager on building and monitoring an Apache Superset dashboard that pulls data from Azure DevOps Server and DefectDojo APIs, exposing **real-time KPI/KRI** (e.g. KEV/EPSS).
- **Security Awareness & Culture** – Certified Secure Software Lifecycle Professional (CSSLP – ISC2). Currently undergoing continuous training in cybersecurity on Udemy.
- **DevSecOps Enablement** – Promoting “shift-left” practices across CI/CD, reducing mean time-to-remediate (MTTR) critical findings. Standardised the outer-loop release process for all product teams. Packaged reusable Azure pipelines with step-by-step docs and samples to accelerate adoption.

Threat Modeling

CIS

ASVS

OWASP

SCA

SAST

Defect Management

CI/CD

GDPR

NIS2

## DevSecOps Engineer

📅 Jul 2024 – Nov 2025

- Leading threat modeling and orchestrating security assessments (SAST/DAST, ASVS requirements), and vulnerability management for core microservices through advanced Jenkins pipelines and continuous component updates.
- Developing Infrastructure as Code (IaC) and Ansible-based configuration tools to standardize deployments and provide a common platform of shared services and integration patterns across the organization.
- Delivering L3 technical support for containerized solutions in clustered environments, assisting operations teams and customers with complex Ansible-driven deployments and escalations.

Spring Boot

Ansible

Postgres

Keycloak

Docker Swarm

Jenkins

Azure

Postman

Burp Suite

## Software Engineer

📅 Apr 2021 – Jul 2024

- Maintaining and optimizing an aeronautical publishing platform for ENAV Group (the Italian ANSP), refactoring its Kafka-based microservices architecture to resolve performance bottlenecks and handle massive data streams.
- Contributing to the IAM transition from a legacy in-house system to Keycloak, designing and developing a custom Python/Django migration tool and dashboard to streamline the integration process.
- Organized two editions of a small hackathon at Sapienza University, using my network in the academy and challenging students with programming tasks. This brought new talent into our company.

Java

Spring Boot

Apache Kafka

Django

Non-Functional Requirements

Microservices

Vaadin

## Temple University – Rome Campus

### Intern Supervisor

📅 May 2024 – Ongoing

- Sponsored student internships at Edukai, a startup where they developed and integrated services into the core product using advanced generative AI techniques and open-source projects in innovative ways.

- Supervised an intern working on the "Tiber River" project, developing a pipeline (in *Python*) to automate the generation of 3D models of iconic monuments using OpenStreetMap data (OSM), advanced photogrammetry with generative AI, and automated 3D modeling refinements.

### Adjunct Instructor

📅 Jan 2019 – Ongoing

- Teaching several classes, including *Problem Solving & Programming in Python*, *Statistical Business Analytics*, *Intermediate Algebra*, a foundational course that is part of the GenEd (General Education) curriculum and *Mechanics of Solids*.
- Organized annually the *Motor Valley* field trip to Modena, with workshops, seminars and meetings with motorsport experts (i.e. Dallara Academy, the Maserati factory and the Ferrari museum) for the *Solids* class.

Educational Program Design

Lesson Planning

University Teaching

Online Tutoring

### Teaching Assistant

📅 Jan 2018 – Dec 2019

- Teaching *Mechanics of Solids* in English, to American mechanical engineering students.
- Gained significant insight into the Anglo-Saxon approach to education.

## Sapienza University

### PhD Researcher in HPC & Computational Fluid Dynamics (CFD)

📅 Sep 2017 – Jan 2021

- Advanced research in computational science leveraging **High Performance Computing (HPC) infrastructures**, addressing large-scale numerical modelling, parallel computing, and performance optimization challenges **across distributed architectures**.
- Designed and optimized **scalable simulation workflows on multi-node HPC systems**, applying parallel programming paradigms and **resource orchestration** techniques to maximize computational efficiency and throughput.
- Explored **data-intensive computational methodologies**, strengthening foundations in large-scale data processing, algorithmic efficiency, and compute-driven experimentation.
- **Mentored six students contributing to the research programme**, supervising thesis projects within HPC environments and fostering technical growth in parallel computing, scientific modelling, and research best practices.
- Coordinated **task planning, workload distribution, and collaborative development** across research contributors, enhancing team productivity in **compute-intensive environments**.

Research

Team Leading

Mentoring

HPC

Agile

### Teaching Assistant

📅 Mar 2019 – Jun 2020

- Teaching assisting a computational aerodynamics lab, for the Department of Aerospace and Mechanical Engineering (DIMA), in a small class environment focused on hands-on learning.
- Training students on programming and applying basic aerodynamic principles to three-dimensional finite wings design. The code was developed in groups.
- Scouting students to recruit them, getting involved in departmental projects and join our research team.

### Teaching Assistant

📅 Oct 2018 – Dec 2019

- Teaching assisting a calculus class for the School of Industrial Engineering (ICI) to hundreds of freshman aerospace engineering students. Some of my former students are now working with me.
- Teaching assisting a Linear Algebra class for the Department of Basic Sciences Applied to Engineering (SBAI) to Biomedical, Energy, and Electrical Engineering classes.
- Interacting with students from different academic backgrounds and coordinating with different professors, with different teaching methods.

## PROJECTS

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### Temple University - Rome Campus

#### walkintiber - Immersive Digital Twin of Rome

📅 Aug 2024 – Present

- Co-founded a high-resolution, 3D digital twin of Rome accessible on the web, allowing users to virtually explore the Eternal City in immersive detail.
- Automated 24/7 pipeline to integrate live community data from OpenStreetMap (OSM), scaling the infrastructure horizontally for global coverage and vertically for enriched realism, including: textures, digital elevation models (DEM), and environmental detail.
- Integrating generative AI for texture creation and prototyped monument modeling using photogrammetry; developing VR compatibility for enhanced user engagement.
- Engaging TUR students and faculty through local "walks in Rome" contributing to OSM, and promoting hands-on learning in data mapping, AI, and VR technologies.

This project demonstrates TUR's commitment to innovative educational experiences that blend advanced technology with cultural heritage.

laC Terraform MongoDB Atlas FastAPI NestJS Cloudflare Apache Airflow Blender PlayCanvas

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### IDS AirNav – ENAV Group

#### Migration Tool - Seamless transition from a legacy IAM solution

📅 Apr 2023 – Oct 2023

- Designed the migration tool, consisting of two microservices: a Django web application for the dashboard, and Redis for real-time logging capabilities, leveraging Channels (within Django) and eliminating the need for polling.
- Automated the migration process to facilitate a seamless transition from a legacy IAM solution to a modern Keycloak-based IAM system, ensuring minimal downtime and business continuity for users.
- Provided two deployment options: a full-featured version with a graphical interface for configuration and tracking, and a lightweight "headless" version allowing CLI-driven migrations.
- Integrated a bunch of different clients (HTTP, LDAP, PostgreSQL, and SSH using *paramiko*) for accessing and retrieving configurations from the legacy system, ensuring validation features on the dashboard itself.

This not only provided a structured approach to the transition, but also enabled detailed tracking and verification, ensuring data integrity and system resilience.

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### NASA SpaceApps Challenge

#### CROPP - A whole new way of farming

📅 Apr 2015 - Oct 2015

- First-prize winning project. Easy-to-use platform, for farmers, to monitor and address crop-related threats.
- On-field sensors embedded in distributed hardware devices. Imagery from Low Earth Orbit (LEO) satellites.
- A 48-hour hackathon, to develop a working prototype for the IoT device and an Android mobile app.
- Demo at the World Expo hosted by Milan, in Italy, themed "Feeding the Planet, Energy for Life."
- Pitched the project to NASA's then-Administrator, Charles Bolden Jr. at the U.S. Pavilion.

## TALKS

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### IDS AirNav – ENAV Group

#### AeroSIG 20th Edition

📅 11 – 12 Oct 2022

The Aeronautical Special Interest Group (AeroSIG) conference gathered colleagues and industry experts from over 35 countries, featuring a plenary session on the evolution of IDS AirNav solutions and breakout sessions focused on advanced topics in Air Traffic Management (ATM) and Aeronautical Information Management (AIM).

Presentation title: "IAM Status and Updates."

- Outlining the transition from the legacy IAM solution to a new system, based on Keycloak and customizations.
- Addressing IAM modernization strategies, detailing how to leverage Keycloak for improved security/interoperability.

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## AIMETA - Ass. Italiana Meccanica Teorica e Applicata

### XXIV Congress AIMETA 2019

📅 15 - 19 Sep 2019

The AIMETA Congress is a prominent event fostering cross-disciplinary collaboration in mechanics, mathematics, and applied sciences. The event is recognized for bridging Rational Mechanics and Mathematical Physics with applications in fields such as biomechanics and material science.

Presentation title: "Droplet Homogeneous Nucleation in Two-Way Coupled Turbulent Flows"

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## EUROMECH Conference

### ETC17 - European Turbulence Conference

📅 3 - 6 Sep 2019

📍 Turin, ITA

The European Turbulence Conference (ETC) is a bi-annual event providing a platform for over 450 scientists to present recent advances in turbulence research. ETC17 gathered experts in flow dynamics, offering insights into cutting-edge developments in the field.

Presentation title: "Droplet Nucleation in Turbulent Steam Jets"

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## ERCOFTAC Workshop

### DLES12 - Direct and Large Eddy Simulation Workshop

📅 5 - 7 Jun 2019

📍 Madrid, ESP

The ERCOFTAC DLES Workshop is dedicated to advancements in turbulent flow simulation, focusing on Direct Numerical Simulation (DNS) and Large Eddy Simulation (LES) techniques. The 2019 edition gathered specialists to discuss advances in computational modeling of transitional and turbulent flows.

Presentation title: "Droplet Homogeneous Nucleation in a Turbulent Steam Jet in the Two-Way Coupling Regime"

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## PUBLICATIONS

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### 👥 Conference Proceedings

- **A. Gallegati**, F. Battista, P. Gualtieri, and C. M. Casciola, "Droplet homogeneous nucleation in a turbulent vapour jet in the two-way coupling regime," in *Direct and Large Eddy Simulation XII*, M. García-Villalba, H. Kuerten, and M. V. Salvetti, Eds., Cham: Springer International Publishing, 2020, pp. 143–149, ISBN: 978-3-030-42822-8.

## AWARDS

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### Fondazione Roma Sapienza

#### Excellent graduate student - 6th edition

📅 16 Apr 2018

Awarded among the best graduates of 2017 at Sapienza.

### NASA - Kennedy Space Center (KSC)

#### Galactic Impact Prize

📅 2 Sep 2015

📍 Cape Canaveral, USA

Awarded and invited to attend a scheduled rocket launch.

## GRANTS

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### Temple University

#### Professional Development Grant

📅 Oct 2024 - Jul 2025

Funding to support research and creative work aimed at promoting interdisciplinary learning and global engagement. This involves the application of advanced technologies such as generative AI and VR.

### CINECA

#### ISCRA Class C Projects - HP10CEKU6J

📅 May 2020 - Feb 2021

#### ISCRA Class C Projects - HP10CQBSIR

📅 Oct 2018 - Nov 2019

Resources on HPC facilities for advanced numerical simulations in fluid dynamics, leveraging up to 100,000 core hours for heavy workloads and visualization tasks.

## EDUCATION

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### Sapienza University – DIMA

#### Ph.D. in Theoretical & Applied Mechanics

📅 Nov 2017 – May 2021

Thesis title: “Droplet condensation in turbulent jets.” Supervised by: Prof. Paolo Gualtieri.

- Developing high-performance software (HPC) for simulating complex, high-resolution, multi-phase turbulent flows.
- Maintaining optimized codebases, using parallel computing paradigms (OpenMP, MPI, CUDA) to take full advantage of distributed computing facilities
- Deriving an analytical approach to accurately represent phase transition processes interaction, in turbulent flows.
- Building a pipeline to deploy the compiled code onto remote supercomputers, running simulations on different environments and to periodically post-process intermediate results, monitoring the status real-time.

Turbulence

Multiphase Flows

HPC

Direct Numerical Simulations

Fortran

#### M.Sc. in Aeronautical Engineering

📅 Sept 2014 – July 2017

**110/110 cum laude** Thesis title: “A consistent framework for mass, momentum and energy exchange in two phase flows: DNS of a turbulent jet in the two-way coupling regime.” Supervised by: Prof Carlo Massimo Casciola.

- Specialized into aerodynamics, propulsion, and structures (APS) curriculum.
- Focused on continuum mechanics, applying fundamental science to solve complex engineering problems.
- Fascinated by theoretical approach and numerical methods.

Fortran

PDE

Navier-Stokes Eqs.

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### ISAE Supaero – DAEP

#### Erasmus+ Program

📅 Jan 2016 – Aug 2016

📍 Toulouse, FRA

Project title: “Cost versus accuracy in LES of wall bounded flows in CharlesX.” Supervised by: Prof. Julien Bodart.

- Studied in an international environment, in the heart of an aerospace hub in Europe, with many different cultures.
- Experienced with enthusiasms the multidisciplinary approach, that is typical of France and that has enriched me so much from a technical point of view.
- Developed Python code for post-processing fluid dynamics numerical simulations, benchmarking a software developed by the Center for Turbulence Research (CTR), in Stanford.

python

C++

bash

French

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### Sapienza University

#### B.Sc. in Aerospace Engineering

📅 Sept 2011 – Nov 2014

**110/110 cum laude** Thesis title: “The Newton’s problem of minimal resistance.” Supervised by: Prof. Andrea Dall’Aglio.

Functional Analysis

ℒ<sub>A</sub>T<sub>E</sub>X

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### LSS J.F. Kennedy

#### High School Diploma

📅 Sept 2006 – July 2011

**87/100** Baccalaureate thesis: “Revolutions in history and scientific thought.”

- Playing competitive water polo with daily training. I learned a lot about cooperation, discipline and resilience, both in and out of the pool.
- Advanced education program (PNI), including intensive study of scientific subjects such as mathematics and physics, complemented by the use of computer science as a tool.

## REFEREES

**Prof. Andrea Dall'Aglio** @ Sapienza University  
✉ dallaglio@mat.uniroma1.it

**Prof. Mary Conran** @ Temple University Rome Campus  
✉ mary.conran@temple.edu

**Prof. Carlo Massimo Casciola** @ Sapienza University  
✉ carlomassimo.casciola@uniroma1.it

**Prof. Paolo Gualtieri** @ Sapienza University  
✉ paolo.gualtieri@uniroma1.it

**Leonardo Moavero** @ IDS AirNav  
✉ leonardo.moavero@idsairnav.com

**Valerio Ferrara** @ ENAV Group  
✉ valerio.ferrara@enav.it

**Prof. Julien Bodart** @ ISAE Supaero  
✉ julien.bodart@isae.fr

## LANGUAGES

English (Full Professional)  
French  
Italian (Native)



## MORE

I love working in diverse teams, fostering growth, and building strong relationships with my colleagues. Outside of work, you'll find me cooking with friends and family, discussing movies of all genres, staying active, or diving into late night coding sessions.

I'm always looking for opportunities to grow, share knowledge, and make a positive impact. I free-dive into the blue and look around. I like to take action.

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