Andrea Gallegati, Ph.D

CSSLP – DevSecOps Engineer @ IDS AirNav – ENAV Group

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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

IDS AirNav – ENAV Group
Secure-SDLC Engineer (appointed *Security Champion*)

📅 Mar 2023 – Ongoing

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 – Ongoing

- Leading threat modeling, dependency analysis, and security assessments (SAST/DAST findings, ASVS requirements), using advanced Jenkins pipelines to ensure a seamless CI/CD process.
- Managing several essential microservices and web apps for the software suite we deliver.
- Maintaining and frequently updating third-party components to address rapidly emerging vulnerabilities.
- Developing IaC and maintaining an installation and configuration tool based on Ansible, to standardize the deployment of solutions.
- Enabling common platform to accelerate development, by offering standardized tools, services, and integration patterns across our organization.
- Supporting operations team and customers deploying, with Ansible, containerized solutions in clustered environments when issues escalate L3 support level.

Spring Boot | Ansible | Postgres | Keycloak | Docker Swarm | Jenkins | Azure | Postman | Burp Suite

Software Engineer

📅 Apr 2021 – Jul 2024

- Developing an high-load web application (for aeronautical publishing) using Spring Boot. A product sold by ENAV Group, the Italian Air Navigation Service Provider (ANSP) with hundreds of customers all around the world.
- Troubleshooting some performance issues, sometimes refactoring its microservice architecture, built around Apache Kafka, consuming massive data.
- Maintaining the legacy IAM solution (developed in-house) and taking part to the transition toward the current IAM solution (based on Keycloak).
- Designing and developing a migration tool for the transition from the legacy IAM solution. I made it in python, using Django for the migration tool dashboard.
- 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*, *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.

Cybertech.eu – Engineering

System Analyst Intern

📅 Apr 2021 – Apr 2021

- Analyzing systems to implement appropriate Identity Access Management (IAM) solutions for a variety of clients in both Linux and Windows environments.

Accenture

Software Developer Intern

📅 Mar 2021 – Mar 2021

- Developing a web-based management software for a department of the Italian Ministry of the Interior.
- Working on jBPM (Java Business Process Model) flows, to automate tasks and managing process instances.

Java Academy

📅 Dec 2020 – Feb 2021

- Crash Course in Java (by Accenture), providing a significant leap into the world of software dev for technology.

Sapienza University

PhD Researcher

📅 Sep 2017 – Jan 2021

- Conducting my research project, mentoring a few students each semester, that contributed to my own project.

Research · Team Leading · Mentoring · Git · 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

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.

`IaC` `Terraform` `MongoDB Atlas` `FastAPI` `NestJS` `Cloudflare` `Apache Airflow` `Blender` `PlayCanvas`

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.

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

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.

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"

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"

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"

PUBLICATIONS

👥 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

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

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

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. |

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 |

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 | LaTeX |

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
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Prof. Mary Conran @ Temple University Rome Campus
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Prof. Carlo Massimo Casciola @ Sapienza University
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Prof. Paolo Gualtieri @ Sapienza University
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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.