Marco **Cascio**

PhD, Assistant Professor, Researcher

Department of Computer Science, Sapienza University of Rome, Via Salaria 113, 00198 Rome, Italy
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Summary

In December 2022, I became an Assistant Professor at the University of Rome UnitelmaSapienza. Additionally, I continue to support the Department of Computer Science at Sapienza University of Rome, where I have been a member of the Computer Vision Laboratory (VisionLab) since 2018. My research primarily focuses on Computer Vision, Artificial Intelligence, Machine/Deep Learning, and Signal Processing.

Languages:

- Italian: Mother tongue
- English: Proficient

Education

Department of Computer Science

Sapienza University of Rome

PhD in Computer Science (with honors)

2018-2021

- Thesis Title: Person Re-ID through Radio Biometric Signatures, Human Silhouette and Skeleton Video Synthesis through Wi-Fi Signals
- Advisors: Luigi Cinque, Chiara Petrioli
- Co-advisor: Danilo Avola

Department of Computer Science

Sapienza University of Rome

Master Degree Computer Science (cum laude)

2015-2018

- Thesis Title: Un Approccio Innovativo basato su Deep Learning per la Classificazione di Human Action
- Advisor: Luigi Cinque
- Co-advisor: Danilo Avola

Department of Computer Science

University of Messina

Bachelor Degree Computer Science

2009-2015

- Thesis Title: Algoritmi di Risoluzione di Anagrammi
- Advisor: Giacomo Fiumara

Experience

Department of Law and Economics - Department of Computer Science

UnitelmaSapienza - Sapienza University of Rome

Assistant Professor, Academic Discipline INF/01 INFORMATICS

Researcher, Academic Disciplines INF/01 INFORMATICS - ING-INF/05

2022 - present

Department of Computer Science

Sapienza University of Rome

Research Fellow, Academic Disciplines INF/01 INFORMATICS - ING-INF/05, Project Title: Human Silhouette Video Synthesis from Wi-Fi Signals

2022

Department of Computer Science

Sapienza University of Rome

Research Fellow, Academic Disciplines INF/01 INFORMATICS - ING-INF/05, Project Title: Device-Free Wi-Fi Human Detection, Localization, Pose Estimation and Person Re-Identification based on CSI and Deep Learning strategies

2021

Department of Computer Science *Sapienza University of Rome*

Research Fellow, Academic Disciplines INF/01 INFORMATICS - ING-INF/05, Project Title: Device-Free Wi-Fi Human Detection, Localization, Pose Estimation and Person Re-Identification based on CSI and Deep Learning strategies *2020*

Department of Computer Science *Sapienza University of Rome*

Scholarship, Application of Machine Learning Techniques for Underwater Systems Optimization *2019*

Department of Computer Science *Sapienza University of Rome*

Scholarship, Development of Machine Learning Techniques for Underwater Mobile Networks Optimization *2018*

Research Projects

DRAGONS - DRone Aerial imaGes seGmentatiON System *Ministry of Defense*

Work Package Leader - Senior R&D Engineer *2023 - present*

- Design and description of the project use cases
- Design and development of novel deep learning algorithms for low altitude images segmentation

SEARCHER - Smart unmannEd AeRial vehiCles for Human likE monitoRing *Ministry of Defense*

Work Package Leader - Senior R&D Engineer *2022 - present*

- Coordination of the WP2 group
- Study and analysis of the state-of-the art on the anomaly detection, novelty detection, and attention mechanism algorithms
- Design and development of novel deep learning algorithms

PON SMARTOUR - Piattaforma per la promozione del turismo culturale attraverso l'impiego di tecnologie innovative *MIUR*

Senior R&D Engineer *2020*

- Study and analysis of the state of the art on wireless sensing and monitoring technologies
- Design and implementation of a Wi-Fi Person Re-Identification algorithm
- Lab testing of the proposed solution

MEDUSA - Monitoring maritimE areas by a cooperative Distributed Unmanned System made of heterogeneous Assets *Stato Maggiore della Marina (MARISTAT)*

Senior R&D Engineer *2018-2020*

- Study and analysis of the state of the art on the underwater anomaly detection algorithms
- Design and implementation of novel computer vision algorithms for underwater anomaly detection
- Lab testing of the proposed solutions

TEAM - Tecnologie Emergenti per l'Archeologia Marina *Lazio Innova*

Senior R&D Engineer *2014-2020*

- Study and analysis of the state of the art on the underwater novelty/anomaly detection and localization algorithms
- Design and implementation of novel computer vision algorithms for underwater novelty/anomaly detection and localization
- Lab testing of the proposed solutions

RA2M - Augmented Reality for Mobile Applications *Ministry of Defense*

Senior R&D Engineer *2016-2018*

- Study and analysis of the state of the art on visual detection and classification algorithms
- Design and development of algorithms for detection and classification of unexploded devices
- Lab testing of the proposed solutions

Teaching Experience

Teacher at the Master in Data and Process Analysis and Modeling: Methods and Models

UnitelmaSapienza, University of Rome

Modulo 7 - Analisi dei dati testuali, Modulo 8 - Analisi di reti sociali

2023 - present

Lecturer on Informatica e Tecnologie della Comunicazione Digitale

Department of Communication and Social Research (CoRiS), Sapienza University of Rome

Bachelor Degree in Communication, Technologies and Digital Cultures

2023

Lecturer on Digital Content Processing (Course Language: English)

Department of Management, Sapienza University of Rome

Master Degree in Economy and Communication for Management and Innovation

2018-2021

Lecturer on Informatica e Tecnologie della Comunicazione Digitale

Department of Communication and Social Research (CoRiS), Sapienza University of Rome

Bachelor Degree in Public and Corporate Communication

2020

Lecturer on Informatica e Tecnologie della Comunicazione Digitale

Department of Communication and Social Research (CoRiS), Sapienza University of Rome

Bachelor Degree in Communication, Technologies and Digital Cultures

2020

Teacher at ITHUM/ICTAcademy (Course Language: English)

ITHUM SRL, Rome

Master & Executive Programme in Cyber Science, Module A - Internet Based Systems & Programming, Course: Swift - Programming Language

2018

Speaker Experience

Ital-IA

Conference

Oral presentation of paper "Machine Learning for Real Time Analysis of Social Data for Disaster Management"

2019

Other Experience

PhD Summer School

University of Udine

International Summer School on Artificial Intelligence (AI-DLDA 2020)

2020

Society Memberships, Honors & Awards

2020 - present	**Member,** IEEE Organization
2022	**Award for innovation and technological impact,** PNRM Project Title: "INFERENCE - wI-fi seNsing For pErson Re-idENtifiCation and human image synthEsis", Ministry of Defense
2022	**Paper selected for Newsletter,** in *IEEE Biometrics Council Newsletter*, Paper Title: "Person Re-Identification through Wi-Fi Extracted Radio Biometric Signatures"
2020	**Scholarship for International Summer School on Artificial Intelligence,** University of Udine
2019	**Award for innovation and technological impact,** PNRM Project Title: "VERIFY - deVice frEe peRson re-Identification sYstem", Ministry of Defense
2019	**Research grant "Avvio alla Ricerca",** Project Title: "Device-Free Wi-Fi Human Detection, Localization, Pose Estimation and Re-Identification based on CSI and Deep Learning strategies", Sapienza University of Rome

Program Committees and Editorial Boards

2023	**Program Committee,** in *International Conference on Image Analysis and Processing*, 1st International Workshop on Advances in Image Satellite Processing and Interpretation	*Udine, Italy*
2023	**Guest Editor,** in *Journal of Computational and Cognitive Engineering*, Special Issue "Current Trends and New Frontiers of Brain-Computer Interface"	*JCCE*
2022	**Guest Editor,** in *Remote Sensing Journal* (Quartile: Q1, h-index: 168, Impact Factor: 5.349), Special Issue "Unmanned Aerial Vehicles (UAV): New Solutions and Applications for Real-Life Tasks"	*Remote Sensing*
2022	**Program Committee,** in *International Conference on Military Communications and Information Systems*	*Udine, Italy*

Academic Professional Service

Serving as reviewer for the following journals and conferences:

- **IEEE Reviewer**
  - Transactions on Multimedia
  - Transactions on Neural Networks and Learning Systems
- **Springer Nature Reviewer**
  - Artificial Intelligence Review
- **MDPI Reviewer**
  - Electronics
  - Information
  - Sensors

Skills

Programming: C/C++, Python, C#, Java, Matlab, Swift, HTML, SQL
Frameworks: OpenCV, Pytorch, Keras, Tensorflow, Caffe, Scikit-Learn, Numpy
IDE & Tools: Visual Studio, NetBeans, Eclipse, IntelliJ, Pycharm, Android Studio, Xcode
Operating Systems: Windows, Linux Ubuntu, macOS

Personal Statement

I am an Assistant Professor at the University of Rome UnitelmaSapienza, and I also support the Department of Computer Science at Sapienza University of Rome where I have been a member of the Computer Vision Laboratory (VisionLab) since 2018. My research interests lie in the fields of **Computer Vision**, **Artificial Intelligence**, and **Signal Processing**. Over the past few years, I have worked on several research projects focused on **wireless sensing** and **image/video content understanding** applications. In the area of wireless sensing, my in-depth research on **Wi-Fi signals** has opened up new possibilities for surveillance applications. I have developed a novel signal-based sensing modality for tasks such as **Person Re-Identification** and **Video Synthesis**, which traditionally rely on visual information. This approach increases radio signals with visual appearance, expanding the range of available information. In the field of image/video content understanding, I have developed **Event Recognition** methods using **Machine/Deep Learning** strategies and **visual data**. These methods have been applied to applications such as **UAV monitoring** and **human behavior understanding**. My current research interests include **machine/deep learning, scene and event understanding, pattern analysis, signal processing, anomaly detection and localization, human-computer interaction, biometric analysis, medical image analysis, multimodal fusion models, robotics, object tracking, and surveillance systems**.

Publications

Journals

[1] Danilo Avola, **Marco Cascio**, Luigi Cinque, Alessio Fagioli, and Chiara Petrioli. "Person Re-Identification Through Wi-Fi Extracted Radio Biometric Signatures". In: ***IEEE Transactions on Information Forensics and Security***, vol. 17, pp. 1145–1158, 2022 (Quartile: Q1, h-index: 154, Impact Factor: 7.231)

[2] Danilo Avola, **Marco Cascio**, Luigi Cinque, Alessio Fagioli, Gian Luca Foresti, Marco Raoul Marini, Fabrizio Rossi. "Real-Time Deep Learning Method for Automated Detection and Localization of Structural Defects in Manufactured Products". In: ***Computers & Industrial Engineering***, vol. 172, pp. 108512, 2022 (Quartile: Q1, h-index: 148, Impact Factor: 7.180, Peer review: Double-blind)

[3] Danilo Avola, **Marco Cascio**, Luigi Cinque, Alessio Fagioli, and Gian Luca Foresti. "Affective Action and Interaction Recognition by Multi-view Representation Learning from Handcrafted Low-level Skeleton Features". In: ***International Journal of Neural Systems***, pp. 1–23, 2022 (Quartile: Q1, h-index: 67, Impact Factor: 6.325)

[4] Danilo Avola, **Marco Cascio**, Luigi Cinque, Alessio Fagioli, and Gian Luca Foresti. "Human Silhouette and Skeleton Video Synthesis Through Wi-Fi Signals". In: ***International Journal of Neural Systems***, vol. 32, no. 05, p. 2250015, 2022 (Quartile: Q1, h-index: 67, Impact Factor: 6.325)

[5] Danilo Avola, Irene Cannistraci, **Marco Cascio**, Luigi Cinque, Anxhelo Diko, Alessio Fagioli, Gian Luca Foresti, Romeo Lanzino, Maurizio Mancini, Alessio Mecca, Daniele Pannone. "A Novel GAN-Based Anomaly Detection and Localization Method for Aerial Video Surveillance at Low Altitude". In: ***Remote Sensing***, vol. 14, no. 16, pp. 1-18, 2022 (Quartile: Q1, h-index: 168, Impact Factor: 5.349)

[6] Danilo Avola, **Marco Cascio**, Luigi Cinque, Alessio Fagioli, and Gian Luca Foresti. "LieToMe: An Ensemble Approach for Deception Detection from Facial Cues". In: ***International Journal of Neural Systems***, vol. 31, no.02, p. 2050068, 2021 (Quartile: Q1, h-index: 70, Impact Factor: 6.325)

[7] Danilo Avola, **Marco Cascio**, Luigi Cinque, Gian Luca Foresti, and Daniele Pannone. "Machine Learning for Video Event Recognition". In: ***Integrated Computer-Aided Engineering***, vol. 28, no. 03, pp. 309–332, 2021 (Quartile: Q2, h-index: 47, Impact Factor: 6.137)

[8] Danilo Avola, **Marco Cascio**, Luigi Cinque, Gian Luca Foresti, Cristiano Massaroni, and Emanuele Rodolà. "2-D Skeleton-Based Action Recognition via Two-Branch Stacked LSTM-RNNs". In: ***IEEE Transactions on Multimedia***, vol. 22, no. 10, pp. 2481–2496, 2020 (Quartile: Q1, h-index: 144, Impact Factor: 6.513)

Conferences

[9] Danilo Avola, **Marco Cascio**, Luigi Cinque, Alessio Fagioli, Gian Luca Foresti, Marco Raoul Marini, and Daniele Pannone. "Analyzing EEG Data with Machine and Deep Learning: A Benchmark". In: ***Image Analysis and Processing (ICIAP)***, Springer International Publishing, pp. 335–345, 2022 (Peer review: Double-blind)

[10] Danilo Avola, Marco Bernardi, **Marco Cascio**, Luigi Cinque, Gian Luca Foresti, and Cristiano Massaroni. "A New Descriptor for Keypoint-Based Background Modeling". In: ***Image Analysis and Processing (ICIAP)***, Springer International Publishing, pp. 15–25, 2019 (Peer review: Double-blind)

[11] Danilo Avola, **Marco Cascio**, Luigi Cinque, Alessio Fagioli, Gian Luca Foresti, and Cristiano Massaroni. "Master and Rookie Networks for Person Re-identification". In: ***Computer Analysis of Images and Patterns (CAIP)***, Springer International Publishing, pp. 470–479, 2019

[12] M. Vernier, **Marco Cascio**, Gian Luca Foresti, and M. Farinosi. "Machine Learning for Real-Time Analysis of Social Data for Disaster Management". In: ***Ital-IA 2019***, pp. 1–2, 2019 (White paper)