Marco **Cascio**

PhD, Assistant Professor, Researcher

Summary

In December 2022, I became an Assistant Professor at the UnitelmaSapienza University in Rome. Besides, I still support the Department of Computer Science at the Sapienza University of Rome, where I still am a member of the Computer Vision Laboratory (VisionLab) since 2018. My research topics mainly focus 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

Università degli Studi di Messina

Bachelor Degree Computer Science

2009-2015

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

Experience

Department of Legal and Economic Sciences - 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

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

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

- 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 — *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

Lecturer for Digital Content Processing (Course Language: English) — *Department of Management*

Master Degree in Economy and Communication for Management and Innovation — *2018-2021*

Lecturer for Computer Science and Information Technology — *Department of Communication and Social Research (CoRiS)*

Bachelor Degree in Public and Corporate Communication — *2020*

Lecturer for Computer Science and Information Technology — *Department of Communication and Social Research (CoRiS)*

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 - Progamming Language *2018*

Speaker Experience

Ital-IA *Conference*

Oral presentation of paper "Machine Learning for Real Time Analysis of Social Data for Disaster Managemen" *2019*

Other Experience

PhD Summer School *Udine, Italy*

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	**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: 144, 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:

- **IEEE**
  - Transactions on Multimedia
  - Transactions on Industrial Electronics
- **Elsevier**
  - Pattern Recognition
  - Signal Processing
  - Journal of Visual Communication and Image Representation

- **Springer**
  - Artificial Intelligence Review
- **MDPI**
  - Remote Sensing
  - 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 a Postdoctoral research fellow and a member of the Computer Vision Laboratory (VisionLab) at the Department of Computer Science, Sapienza University (Rome). My research interests lie in the fields of **Computer Vision**, **Artificial Intelligence**, and **Signal Processing**. Over the last years, I worked on several research projects for **wireless sensing** and **image/video content understanding** applications. For the former, thanks to the knowledge gathered on **Wi-Fi signals** through in-depth research activity, I opened up a new frontier for a wide range of surveillance applications. The main contribution is a new signal-based sensing modality for **Person Re-Identification** and **Video Synthesis** tasks, traditionally based on visual information, which gives a visual appearance to the information carried by radio signals. For the latter, I developed **Event Recognition** methods using **Machine/Deep Learning** strategies and **visual data**, including **UAV monitoring** and **human behavior understanding** applications. Among the others, current research interests include **machine/deep learning, scene and event understanding, pattern analysis, 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: 140, 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***, pp. 108512, 2022 (Quartile: Q1, h-index: 136, 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: 144, 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: 67, 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: Q1, h-index: 45, 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: 135, Impact Factor: 8.182)

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)