Marco **Cascio**

Assistant Professor, Ph.D.

Department of Law and Economics, UnitelmaSapienza University, Piazza Sassari 4, 00161 Rome, Italy

https://www.unitelmasapienza.it/marco-cascio/

Education

Sapienza University — *Rome, Italy*

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

Sapienza University — *Rome, Italy*

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

University of Messina — *Messina, Italy*

Bachelor Degree Computer Science — *2009-2015*

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

Work Experience

UnitelmaSapienza University — *Rome, Italy*

Assistant Professor, Academic Discipline INF/01 INFORMATICS — *2022 - present*

- Designing and developing deep learning architectures for tasks in Computer Vision and Signal Processing fields

Sapienza University — *Rome, Italy*

Research Fellow, Academic Discipline INF/01 INFORMATICS — *2022*

- Project Title: Human Silhouette Video Synthesis from Wi-Fi Signals
- Designing and developing deep learning architectures for tasks in Computer Vision and Signal Processing fields

Sapienza University — *Rome, Italy*

Research Fellow, Academic Discipline INF/01 INFORMATICS — *2021*

- Project Title: Device-Free Wi-Fi Human Detection, Localization, Pose Estimation and Person Re-Identification based on CSI and Deep Learning strategies
- Designing and developing deep learning architectures for tasks in Computer Vision and Signal Processing fields

Sapienza University — *Rome, Italy*

Research Fellow, Academic Discipline INF/01 INFORMATICS — *2020*

- Project Title: Device-Free Wi-Fi Human Detection, Localization, Pose Estimation and Person Re-Identification based on CSI and Deep Learning strategies
- Designing and developing deep learning methods for tasks in Computer Vision and Signal Processing fields

Sapienza University — *Rome, Italy*

Scholarship — *2019*

- Application of Machine Learning Techniques for Underwater Systems Optimization
- Designing and developing machine learning and deep learning methods for Computer Vision based tasks

Sapienza University — *Rome, Italy*

Scholarship — *2018*

- Development of Machine Learning Techniques for Underwater Mobile Networks Optimization
- Designing and developing machine learning and deep learning architectures for Computer Vision based tasks

Research Projects

SEARCHER - Smart unmannEd AeRial vehiCles for Human likE monitoRing

Italian Ministry of Defense

Work Package Leader

2022 - 2023

- 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

A Brain Computer Interface (BCI) based System for Transferring Human Emotions inside Unmanned Aerial Vehicles (UAVs)

Sapienza University

Staff Member

2022 - 2023

- Creating and deploying innovative deep learning architectures to synthesize and extract human emotions
- Assembling a dataset containing human emotional data
- Developing and assessing original deep learning algorithms

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

MIUR

Staff Member

2021-2022

- Examination and evaluation of current advancements in wireless sensing and monitoring technologies
- Design and implementation of a Wi-Fi Person Re-Identification algorithm
- Lab testing of the proposed solution

Device-Free Wi-Fi Human Detection, Localization, Pose Estimation and Re-Identification based on CSI and Deep Learning strategies

Sapienza University

Principal Investigator

2019 - 2022

- Study and analysis of the state of the art on wireless sensing and monitoring technologies
- Design and implementation of Wi-Fi Human Monitoring algorithms
- Lab testing of the proposed solutions

TEAM - Tecnologie Emergenti per l'Archeologia Marina

Lazio Innova

Staff Member

2020-2021

- 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

MEDUSA - Monitoring maritimE areas by a cooperative Distributed Unmanned System made of heterogeneous Assets

Italian Ministry of Defense

Staff Member

2019-2020

- 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

RA2M - Augmented Reality for Mobile Applications

Italian Ministry of Defense

Staff Member

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

(Professor) Online Course: Programmazione per il Web

Department of Computer Science, Sapienza

Bachelor Degree in Computer Science

2023 - present

(Professor) Analysis and Modeling of Data and Processes (AMDP) Master

UnitelmaSapienza

Responsible for teaching and curriculum development in the following modules:

2023 - present

- Module 7 - Text data analysis
- Module 8 - Social media analysis

(Lecturer) Informatica e Tecnologie della Comunicazione Digitale

Department of Communication and Social Research, Sapienza

Bachelor Degree in Communication, Technologies and Digital Cultures

2022-2023

(Lecturer) Digital Content Processing

Department of Management, Sapienza

Master Degree in Economy and Communication for Management and Innovation
(Course Language: English)

2018-2023

(Lecturer) Informatica e Tecnologie della Comunicazione Digitale

Department of Communication and Social Research, Sapienza

Bachelor Degree in Public and Corporate Communication

2020-2021

(Lecturer) Informatica e Tecnologie della Comunicazione Digitale

Department of Communication and Social Research, Sapienza

Bachelor Degree in Communication, Technologies and Digital Cultures

2019-2020

(Teacher) Master & Executive Programme in Cyber Science

ITHUM/ICTAcademy

Module A - Internet Based Systems & Programming

2018

- Swift - Programming Language I
  (Course Language: English)

Speaker Experience

IA e Reti Sociali: Comprensione automatica delle dinamiche e relazioni online

UnitelmaSapienza University

Online seminar on AI applied to social media analysis

2023

Social Network Analysis: L'IA che fornisce valuable insights

UnitelmaSapienza University

Online seminar on AI applied to social media analysis

2023

IA e Analisi del Testo: Comprensione automatica dei testi digitali

UnitelmaSapienza University

Online seminar on AI applied to text analysis

2023

Sentiment Analysis: L'IA che elabora i aentimenti

UnitelmaSapienza University

Online seminar on AI applied to text analysis

2023

Ital-IA Conference

Rome, Italy

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	*Rome, Italy*
2022	**Paper selected for Newsletter,** in *IEEE Biometrics Council Newsletter*, Paper Title: "Person Re-Identification through Wi-Fi Extracted Radio Biometric Signatures"	*Rome, Italy*
2021	**Award for innovation and technological impact,** PNRM Project Title: "INFERENCE - wI-fi seNsing For pErson Re-idENtifiCation and human image synthEsis", Italian Ministry of Defense	*Rome, Italy*
2020	**Scholarship for International Ph.D. Summer School on Artificial Intelligence,** AI-DLDA	*University of Udine*
2019	**Award for innovation and technological impact,** PNRM Project Title: "VERIFY - deVice frEe peRson re-Identification sYstem", Italian Ministry of Defense	*Rome, Italy*
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*

Program Committees and Editorial Boards

2022	**Guest Editor,** Unmanned Aerial Vehicles (UAV): New Solutions and Applications for Real-Life Tasks	*Remote Sensing J.*
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**
  - Transactions on Multimedia
  - Transactions on Neural Networks and Learning Systems
- **Springer Nature**
  - Artificial Intelligence Review
- **MDPI**
  - Electronics
  - Information
  - Sensors
- **Conferences**
  - International Conference on Military Communications and Information Systems

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
Langages: Italian (Mother tongue), English (Proficient)

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

[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

[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

[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

[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

[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

[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

[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

Conferences

[9] Danilo Avola, Irene Cannistraci, **Marco Cascio**, Luigi Cinque, Anxhelo Diko, Damiano Distante, Gian Luca Foresti, Alessio Mecca, and Ivan Scagnetto. "Real-Time GAN-based Model for Underwater Image Enhancement". In: ***Image Analysis and Processing (ICIAP)***, Springer International Publishing, pp. 412–423, 2023

[10] 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

[11] 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

[12] 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

[13] 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)