

PERSONAL INFORMATION

Fabio Carrara

RESEARCH INTERESTS

Summary

My research interests include deep learning for multimedia data focusing on visual perception, image classification, content-based and cross-media image retrieval and analysis.

Bibliometric Indicators

SCOPUS: h-index 17, citations 1258, documents 76
Google Scholar: h-index 22, citations 2202, i10-index 42

WORK EXPERIENCE

From 01/12/2021 to today

Researcher @ ISTI CNR with a permanent position

Istituto di Scienza e Tecnologie dell'Informazione "Alessandro Faedo" – CNR, Pisa, Italy

From 02/2018 to 03/2018

Visiting Researcher @ Masaryk University, Czech Republic

Visiting the [Data Intensive Systems and Applications \(DISA\) Lab](#), Faculty of Informatics, Masaryk University, Brno, Czech Republic, under the supervision of Dr. Pavel Zezula.

From 2015 to 2021

Research Associate @ ISTI CNR

Istituto di Scienza e Tecnologie dell'Informazione "Alessandro Faedo" – CNR, Pisa, Italy

EDUCATION AND TRAINING

2019

PhD in Computer Engineering @ Università di Pisa, Italy

Thesis: "Deep Learning for Image Classification and Retrieval: Analysis and Solutions to Current Limitations".

2015

Master's Degree in Computer Engineering @ Università di Pisa, Italy

Thesis: "Design and implementation of a system for incremental real-time visual object detection and autonomous recognition". Mark: 110/110 with honours.

INVOLVEMENT IN
SCIENTIFIC PROJECTS

From 01/12/2021 to today

Scientific Coordinator for CNR in the PRIN 2022 project "MUCES".

Istituto di Scienza e Tecnologie dell'Informazione "Alessandro Faedo" – CNR, Pisa, Italy

- CNR Scientific Coordinator in the MUCES PRIN 2022 project (P2022BW7CW).
- Principal Investigator in the Tuscany Health Ecosystem, Spoke 8 - Biotechnologies and Imaging for Neurosciences PNRR project (CUP B83C22003930001).
- Task Leader in the SUN XR EU project (GA 101092612).
- Participation in the AI4Media EU project (GA 951911).
- Tutoring of 3 PhDs in Computer Engineering, University of Pisa.
- Tutoring of 9 Master's theses in Computer Engineering / Science, University of Pisa.

From 2015 to 2021

Research Associate at ISTI CNR

Istituto di Scienza e Tecnologie dell'Informazione "Alessandro Faedo" – CNR, Pisa, Italy

- Participation in the AI-MAP project funded by the Tuscany Region (CNR4C).
- Participation in the ADA project, funded by the Tuscany Region (POR FESR 2014-2020).
- Participation in the "SmartNews: Social Sensing for Breaking News" project, funded by the Tuscany Region (FAR-FAS 2014).
- Winner of PhD scholarship from ISTI "A. Faedo" CNR on "Visual Object Detection and Recognition".

TEACHING / TUTORING
ACTIVITY

2023

Teacher (12 hours) for the "Deep Learning for Multimedia Retrieval & Analysis" module in the context of the "Master in Big Data Analytics & Social Mining" offered by the University of Pisa and CNR.

- 2022 **Teacher** (8 hours) for the “Deep Learning tools for Image Classification and Retrieval” module in the context of the 2022 “Digital Tools for Humanists” Summer School organized by the University of Pisa, June 15, 2022.
- 2021-2022 **Teaching assistant** (12 hours) for the “Deep Learning for Multimedia Retrieval & Analysis” module in the context of the “Master in Big Data Analytics & Social Mining” offered by the University of Pisa and CNR.
- 2021 **Teaching assistant** (12 hours) for the “Multimedia Information Retrieval and Computer Vision” course for the Master degree in Computer Engineering – University of Pisa.
- 2020+ **Tutor** for 9 Master theses in Computer Engineering / Artificial Intelligence and Data Engineering / Computer Science @ University of Pisa.

ORGANIZATION OF SCIENTIFIC MEETINGS (in the last 10 years)

- 2023 **Web Chair** – 3rd Italian National CINI Congress on AI (Ital-IA 2023) – Pisa, Italy – 29-31 May, 2023 – <https://www.ital-ia2023.it>
- 2022 **Publicity Chair** – 30th Italian Symposium on Advanced Database Systems (SEBD) - Tirrenia (Pisa), Italy - 19-22 June 2022.
- 2020 **Publication Chair** – 13th International Conference on Similarity Search and Applications (SISAP) – Copenhagen, Denmark, September 30 – October 2, 2020.
- 2019+ **Program Committee Member**
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)
 - 2025 Main Track – June 11-15, 2025 – Nashville, TN, USA
 - 2024 Main Track – June 17-21, 2024 – Seattle, WA, USA
 - AAAI Conference on Artificial Intelligence (AAAI)
 - 2023 Main Track – February 7-14, 2023 – Washington, DC, USA
 - 2021 Student Abstract and Poster Track – February 2-9, 2021 – Virtual Event
 - 2020 Main Track – February 7-14, 2020 – New York, USA
 - European Conference on Artificial Intelligence (ECAI)
 - 2023 Main Track – September 30 - October 4, 2023 – Kraków, Poland
 - 2020 Main Track – August 29 - September 8, 2020 – Virtual Event
 - International Conference on Multimedia Retrieval (ICMR)
 - 2023 Main Track – June 12-15, 2023 – Thessaloniki, Greece
 - International Conference on Information and Knowledge Management (CKIM)
 - 2022 Applied Research Track – October 17-21, 2022 – Atlanta, GA, USA
 - International Joint Conference on Artificial Intelligence and Pacific Rim International Conference (IJCAI-PRICAI)
 - 2020 Main Track – January 7-15, 2021 – Virtual Event
 - International Conference on Similarity Search and Applications (SISAP)
 - 2020 Main Track – September 30 - October 2, 2020 – Virtual Event
 - ACM International Conference on Multimedia (MM)
 - 2019 Main Track – October 21-25, 2019 – Nice, France
- 2015-2016 **Volunteer** – SIGIR 2016, SISAP 2015.

FURTHER INFORMATION

- Awards**
2024. The paper “Is Clip the Main Roadblock for Fine-Grained Open-World Perception?” [DOI: 10.1109/CBMI62980.2024.10859215] won the **Best Paper Award** at CBMI 2024.
2022. **ERCIM Cor Baayen Award 2022** – 5000 EUR prize for best young informatics and applied mathematics researcher in European research institutions – <https://www.ercim.eu/human-capital/cor-baayen-award>
2018. **ISTI Young Research Award** – 1000 EUR prize for best young (under 32 years) researcher in ISTI CNR – <https://www.isti.cnr.it/en/research/awards/young-researcher-award>
2017. **ISTI Grant for Young Mobility** – 3000 EUR travel grant to visit foreign universities and institutions and foster international collaboration – <https://www.isti.cnr.it/en/research/awards/grants-for-young-mobility>
2016. The paper “Car Parking Occupancy Detection using Smart Camera Networks and Deep Learning” [DOI:10.1109/ISCC.2016.7543901] won the **Best Local Paper Award** at ISCC 2016.

Software and datasets

- [CNRPark-EXT](#) – Decentralized Car Parking Visual Occupancy Detection [[Dataset](#) | [Code & Models](#)]

- **MEYE** – Web-app for real-time pupillometry via pupil segmentation using convolutional neural networks [[Webapp](#) | [Code](#) | [Dataset](#)]
- **VISIONE** – Large-scale Interactive Video Analysis and Retrieval System [[Demo](#)]
- <https://github.com/fabiocarrara/mocap> – Action recognition, segmentation, and prediction from motion capture time series using recurrent neural networks
- **T4SA** – Visual Sentiment Analysis from Twitter Data [[Dataset](#) | [Code & Models](#)]
- **PNNs** – A Multi-Rater Benchmark for Perineuronal Nets Detection and Counting in Fluorescence Microscopy Images [[Dataset](#) | [Code](#)]
- A brain-wide, annotated dataset of WFA-positive perineuronal nets and parvalbumin neurons in the adult mouse brain [[Dataset](#)]
- **VWFP**: Dataset of synthetic images for visual fallen people detection
- COCO, LVIS, Open Images V4 classes mapping [[Resource](#)]
- **CBiGAN-AD**: Combining GANs and AutoEncoders for Efficient Anomaly Detection [[Code](#)]

More at <https://github.com/fabiocarrara>

Research monographs and chapters in collective volumes

- **Editor** of “Similarity Search and Applications: 13th International Conference, SISAP 2020, Copenhagen, Denmark, September 30–October 2, 2020, Proceedings”, Lecture Notes in Computer Science, 12440, Springer, ISBN 978-3-030-60935-1 (2020)
- **Guest Managing Editor** of Information System Journal for the “Special Issue of the 13th International Conference on Similarity Search and Applications (SISAP 2020)”, in press.

Evaluation of research results

- **Reviewer** for International Journals: ACM Computing Surveys, IEEE TNNLS, IEEE TOM, PR Letters, JISA, SP:IC, IS, Journal of Imaging, MVAP, IJTSTS.

PERSONAL SKILLS

Mother tongue(s)

Italian

Other language(s)

COMPRESIONE		PARLATO		PRODUZIONE SCRITTA
Ascolto	Lettura	Interazione	Produzione orale	
C2	C2	C1	C1	C2

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

ATTACHMENT

- List of the top publications in the main research field (in the last ten years)

Date: Pisa, 3 March 2025

List of the top publications in the main research field (in the last ten years)

International Journal Papers

1. Vadicamo, L., Arnold, R., Bailer, W., Carrara, F., Gurrin, C., Hezel, N., ... & Vrochidis, S. (2024). Evaluating Performance and Trends in Interactive Video Retrieval: Insights from the 12th VBS Competition. IEEE Access.
2. Schall, K., Bailer, W., Barthel, K. U., Carrara, F., Lokoč, J., Peška, L., ... & Vairo, C. (2024). Interactive multimodal video search: an extended post-evaluation for the VBS 2022 competition. International Journal of Multimedia Information Retrieval, 13(2), 15.
3. Fazzari, E., Carrara, F., Falchi, F., Stefanini, C., & Romano, D. (2024). Using AI to decode the behavioral responses of an insect to chemical stimuli: towards machine-animal computational technologies. International Journal of Machine Learning and Cybernetics, 15(5), 1985-1994.
4. González, J. L. S., Álvarez García, J. A., Rendón-Segador, F. J., & Carrara, F. (2023). Conditioned Cooperative training for semi-supervised weapon detection. Neural Networks, 167, 489-501. <https://doi.org/10.1016/j.neunet.2023.08.043>
5. Banterle, F., Artusi, A., Moreo, A., Carrara, F., & Cignoni, P. (2023). NoR-VDNet++: Real-Time No-Reference Image Quality Metrics. IEEE Access, 11, 34544–34553.
6. Lupori, L., Totaro, V., Cornuti, S., Ciampi, L., Carrara, F., Grilli, E., Viglione, A., Tozzi, F., Putignano, E., Mazziotti, R., Amato, G., Gennaro, C., Tognini, P., & Pizzorusso, T. (2023). A comprehensive atlas of perineuronal net distribution and colocalization with parvalbumin in the adult mouse brain. Cell Reports, 42(7). <https://doi.org/10.1016/j.celrep.2023.112788>
7. Ciampi, L., Gennaro, C., Carrara, F., Falchi, F., Vairo, C., & Amato, G. (2022). Multi-camera vehicle counting using edge-AI. Expert Systems with Applications, 207, 117929.

8. Di Benedetto, M., Carrara, F., Tafuri, B., Nigro, S., De Blasi, R., Falchi, F., Gennaro, C., Gigli, G., Logroscino, G., Amato, G., & others. (2022). Deep networks for behavioral variant frontotemporal dementia identification from multiple acquisition sources. *Computers in Biology and Medicine*, 148, 105937.
9. Viglione, A., Sagona, G., Carrara, F., Amato, G., Totaro, V., Lupori, L., Putignano, E., Pizzorusso, T., & Mazziotti, R. (2022). Behavioral impulsivity is associated with pupillary alterations and hyperactivity in CDKL5 mutant mice. *Human Molecular Genetics*, 31(23), 4107–4120.
10. Ciampi, L.; Carrara, F.; Totaro, V.; Mazziotti, R.; Lupori, L.; Santiago, C.; Amato, G.; Pizzorusso, T.; Gennaro, C. (2022). Learning to count biological structures with raters' uncertainty. *Medical Image Analysis* pp. 102500, Elsevier.
11. Benedetto, M. D.; Carrara, F.; Ciampi, L.; Falchi, F.; Gennaro, C.; Amato, G. (2022). An embedded toolset for human activity monitoring in critical environments. *Expert Systems with Applications* pp. 117125, Pergamon.
12. Massoli, F. V.; Carrara, F.; Amato, G.; Falchi, F. (2021). Detection of Face Recognition Adversarial Attacks. *Computer Vision and Image Understanding Volume n. 202* pp. 103103, Elsevier.
13. Benedetto, M. D.; Carrara, F.; Meloni, E.; Amato, G.; Falchi, F.; Gennaro, C. (2021). Learning accurate personal protective equipment detection from virtual worlds. *Multimedia Tools and Applications* n. 80 (15) pp. 23241-23253, Springer US.
14. Messina, N.; Amato, G.; Carrara, F.; Gennaro, C.; Falchi, F. (2021). Solving the same-different task with convolutional neural networks. *Pattern Recognition Letters* n. 143 pp. 75-80, North-Holland.
15. Mazziotti, T.; Raffaele, ; Carrara, ; Fabio, ; Viglione, ; Aurelia, ; Lupori, ; Leonardo, ; Verde, L.; Luca, ; Benedetto, ; Alessandro, ; Ricci, ; Giulia, ; Sagona, ; Giulia, ; Amato, ; Giuseppe, ; Pizzorusso, (2021). MEYE: Web App for Translational and Real-Time Pupillometry. *eNeuro* n. 8 (5), Society for Neuroscience.
16. Amato, G.; Bolettieri, P.; Carrara, F.; Debole, F.; Falchi, F.; Gennaro, C.; Vadicamo, L.; Vairo, C. (2021). The VISIONE video search system: exploiting off-the-shelf text search engines for large-scale video retrieval. *Journal of Imaging* n. 7 (5) pp. 76, Multidisciplinary Digital Publishing Institute.
17. Viglione, A.; Mazziotti, R.; Carrara, F.; Lupori, L.; Verde, L. L.; Benedetto, A.; Sagona, G.; Amato, G.; Pizzorusso, T. (2021). P. 0204 Meye web-app: translational and real-time pupillometry for studying cognitive and emotional processing. *European Neuropsychopharmacology* n. 53 pp. S149-S150, Elsevier.
18. Amato, G.; Carrara, F.; Falchi, F.; Gennaro, C.; Vadicamo, L. (2020). Large-scale instance-level image retrieval. *Information Processing & Management* n. 57 (6) pp. 102100, Pergamon.
19. Messina, N.; Amato, G.; Carrara, F.; Falchi, F.; Gennaro, C. (2020). Learning visual features for relational cbir. *International Journal of Multimedia Information Retrieval* n. 9 (2) pp. 113-124, Springer London.
20. Carrara, F.; Elias, P.; Sedmidubsky, J.; Zezula, P. (2019). LSTM-based real-time action detection and prediction in human motion streams. *Multimedia Tools and Applications* n. 78 (19) pp. 27309-27331, Springer US.
21. Carrara, F.; Falchi, F.; Caldelli, R.; Amato, G.; Becarelli, R. (2019). Adversarial image detection in deep neural networks. *Multimedia Tools and Applications* n. 78 (3) pp. 2815-2835, Springer US.
22. Artusi, A.; Banterle, F.; Carrara, F.; Moreo, A. (2019). Efficient evaluation of image quality via deep-learning approximation of perceptual metrics. *IEEE Transactions on Image Processing* n. 29 pp. 1843-1855, IEEE.
23. Carrara, F.; Falchi, F.; Amato, G.; Becarelli, R.; Caldelli, R. (2018). Detecting Adversarial Inputs by Looking in the Black Box. *ERCIM News* (116) pp. 16-17, ERCIM.
24. Amato, G.; Carrara, F.; Falchi, F.; Gennaro, C.; Meghini, C.; Vairo, C. (2017). Deep learning for decentralized parking lot occupancy detection. *Expert Systems with Applications* n. 72 pp. 327-334, Pergamon.
25. Carrara, F.; Esuli, A.; Fagni, T.; Falchi, F.; Fernández, A. M. (2017). Picture it in your mind: Generating high level visual representations from textual descriptions. *Information Retrieval Journal* n. 21 (2) pp. 208-229, Springer Netherlands.

International Conference Papers

26. L. Bianchi, F. Carrara, N. Messina and F. Falchi. (2024). "Is Clip the Main Roadblock for Fine-Grained Open-World Perception?". *International Conference on Content-Based Multimedia Indexing (CBMI)*, Reykjavik, Iceland, 2024, pp. 1-8, doi: 10.1109/CBIM62980.2024.10859215.
27. Bianchi, L., Carrara, F., Messina, N., Gennaro, C., Falchi, F. (2024). The devil is in the fine-grained details: Evaluating open-vocabulary object detectors for fine-grained understanding. *Proceedings of the 2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*. In press.
28. Amato, G., Bolettieri, P., Carrara, F., Falchi, F., Gennaro, C., Messina, N., Vadicamo, L., & Vairo, C. (2023). VISIONE: A Large-Scale Video Retrieval System with Advanced Search Functionalities. *Proceedings of the 2023 ACM International Conference on Multimedia Retrieval*, 649–653.
29. Sedmidubsky, J., Carrara, F., & Amato, G. (2023). SegmentCodeList: Unsupervised Representation Learning for Human Skeleton Data Retrieval. *European Conference on Information Retrieval*, 110–124.
30. Serra, A., Carrara, F., Tesconi, M., & Falchi, F. (2023). The Emotions of the Crowd: Learning Image Sentiment from Tweets via Cross-modal Distillation. *European Conference on Artificial Intelligence (ECAI) 2023*. IOS Press, 2089-2096.
31. Carrara, F., Pasco, L., Gennaro, C., & Falchi, F. (2022). Learning to detect fallen people in virtual worlds. *Proceedings of the 19th International Conference on Content-Based Multimedia Indexing*, 126–130.
32. Messina, N.; Amato, G.; Carrara, F.; Gennaro, C.; Falchi, F. (2022) Recurrent Vision Transformer for Solving Visual Reasoning Problems. *International Conference on Image Analysis and Processing* pp. 50-61, Springer, Cham.
33. Gennaro, C.; Amato, G.; Carrara, F.; Ciampi, L. (2022), Counting or Localizing? Evaluating Cell Counting and Detection in Microscopy Images. *International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP)* pp. 887-897, ScitePress.
34. Sorano, D.; Carrara, F.; Cintia, P.; Falchi, F.; Pappalardo, L. (2021). Automatic Pass Annotation from Soccer Video Streams Based on Object Detection and LSTM. *ECML PKDD: Joint European Conference on Machine Learning and Knowledge Discovery in Databases* pp. pp. 475-490, Springer Cham.

35. Carrara, F.; Caldelli, R.; Falchi, F.; Amato, G. (2021). Defending Neural ODE Image Classifiers from Adversarial Attacks with Tolerance Randomization. *International Conference on Pattern Recognition* pp. 425-438, Springer, Cham.
36. Carrara, F.; Amato, G.; Brombin, L.; Falchi, F.; Gennaro, C. (2020). Combining GANs and AutoEncoders for Efficient Anomaly Detection. *25th International Conference on Pattern Recognition (ICPR)* pp. 3939-3946, IEEE.
37. Banterle, F.; Artusi, A.; Moreo, A.; Carrara, F. (2020). Nor-Vdpnet: A No-Reference High Dynamic Range Quality Metric Trained On Hdr-Vdp 2. *2020 IEEE International Conference on Image Processing (ICIP)* pp. 126-130, IEEE.
38. Carrara, F.; Gennaro, C.; Falchi, F.; Amato, G. (2020). Learning Distance Estimators from Pivoted Embeddings of Metric Objects. *International Conference on Similarity Search and Applications* pp. 361-368, Springer, Cham.
39. Carrara, F.; Amato, G.; Falchi, F.; Gennaro, C. (2020). Continuous ODE-defined Image Features for Adaptive Retrieval. *International Conference on Multimedia Retrieval (ICMR 2020)* pp. 198-206, .
40. Amato, G.; Bolettieri, P.; Carrara, F.; Debole, F.; Falchi, F.; Gennaro, C.; Vadicamo, L.; Vairo, C. (2019). VISIONE at VBS2019. *International Conference on Multimedia Modeling* pp. 591-596, Springer, Cham.
41. Amato, G.; Carrara, F.; Falchi, F.; Gennaro, C.; Lagani, G. (2019). Hebbian learning meets deep convolutional neural networks. *International Conference on Image Analysis and Processing* pp. 324-334, Springer, Cham.
42. Messina, N.; Amato, G.; Carrara, F.; Falchi, F.; Gennaro, C. (2019). Testing deep neural networks on the same-different task. *2019 International Conference on Content-Based Multimedia Indexing (CBMI)* pp. 1-6, IEEE.
43. Caldelli, R.; Becarelli, R.; Carrara, F.; Falchi, F.; Amato, G. (2019). Exploiting CNN layer activations to improve adversarial image classification. *2019 IEEE International Conference on Image Processing (ICIP)* pp. 2289-2293, IEEE.
44. Carrara, F.; Caldelli, R.; Falchi, F.; Amato, G. (2019). On the robustness to adversarial examples of neural ode image classifiers. *2019 IEEE International Workshop on Information Forensics and Security (WIFS)* pp. 1-6, IEEE.
45. Bolettieri, P.; Carrara, F.; Debole, F.; Falchi, F.; Gennaro, C.; Vadicamo, L.; Vairo, C. (2019). An image retrieval system for video. *International Conference on Similarity Search and Applications* pp. 332-339, Springer, Cham.
46. Carrara, F.; Amato, G.; Falchi, F.; Gennaro, C. (2019). Evaluation of continuous image features learned by ode nets. *International Conference on Image Analysis and Processing* pp. 432-442, Springer, Cham.
47. Amato, G.; Bolettieri, P.; Carrara, F.; Ciampi, L.; Gennaro, C.; Leone, G. R.; Moroni, D.; Pieri, G.; Vairo, C. (2019). Parking Lot Monitoring with Smart Cameras. *i-Cities: 5th Italian Conference on ICT for Smart Cities And Communities*.
48. Carrara, F.; Becarelli, R.; Caldelli, R.; Falchi, F.; Amato, G. (2018). Adversarial Examples Detection in Features Distance Spaces. *European Conference on Computer Vision (ECCV) Workshops* pp. 313-327.
49. Amato, G.; Bolettieri, P.; Carrara, F.; Falchi, F.; Gennaro, C. (2018). Large-Scale Image Retrieval with Elasticsearch. *The 41st International ACM SIGIR Conference on Research & Development in Information Retrieval* pp. 925-928, ACM.
50. Amato, G.; Bolettieri, P.; Moroni, D.; Carrara, F.; Ciampi, L.; Pieri, G.; Gennaro, C.; Leone, G. R.; Vairo, C. (2018). A wireless smart camera network for parking monitoring. *2018 IEEE Globecom Workshops (GC Wkshps)* pp. 1-6, IEEE.
51. Messina, N.; Amato, G.; Carrara, F.; Falchi, F.; Gennaro, C. (2018). Learning Relationship-Aware Visual Features. *European Conference on Computer Vision (ECCV) Workshops* pp. 468-501, Springer Cham.
52. Amato, G.; Carrara, F.; Falchi, F.; Gennaro, C.; Vairo, C. (2018). Facial-based Intrusion Detection System with Deep Learning in Embedded Devices. *2018 International Conference on Sensors, Signal and Image Processing (SSIP)* pp. 64-68, ACM.
53. Vadicamo, L.; Carrara, F.; Cimino, A.; Cresci, S.; Dell'Orletta, F.; Falchi, F.; Tesconi, M. (2017). Cross-Media Learning for Image Sentiment Analysis in the Wild. *2017 IEEE International Conference on Computer Vision Workshops (ICCVW)* pp. 308-317, .
54. Carrara, F.; Falchi, F.; Caldelli, R.; Amato, G.; Fumarola, R.; Becarelli, R. (2017). Detecting adversarial example attacks to deep neural networks. *15th International Workshop on Content-Based Multimedia Indexing (CBMI)* pp. 1-7, ACM.
55. Amato, G.; Carrara, F.; Falchi, F.; Gennaro, C. (2017). Efficient Indexing of Regional Maximum Activations of Convolutions using Full-Text Search Engines. *2017 ACM on International Conference on Multimedia Retrieval (ICMR)* pp. 420-423, ACM.
56. Amato, G.; Carrara, F.; Falchi, F.; Gennaro, C.; Vairo, C. (2016). Car parking occupancy detection using smart camera networks and deep learning. *2016 IEEE Symposium on Computers and Communication (ISCC)* pp. 1212-1217, IEEE.
57. Carrara, F.; Amato, G.; Falchi, F.; Gennaro, C. (2015). Efficient foreground-background segmentation using local features for object detection. *9th International Conference on Distributed Smart Cameras (ICDSC)* pp. 175-180, ACM.
58. Carrara, F.; Falchi, F.; Gennaro, C. (2015). Semiautomatic Learning of 3D Objects from Video Streams. *International Conference on Similarity Search and Applications* pp. 217-228, Springer, Cham.