

Fabrizio Falchi – List of selected publications

Publications by Type

International Journals

MTAP - Multimedia Tools and Applications

- *Adversarial image detection in deep neural networks* [1]
- *Aggregating binary local descriptors for image retrieval* [2]
- *Building a web-scale image similarity search system* [3]

IPM - Information Processing and Management

- *Large-scale instance-level image retrieval* [4]
- *Similarity caching in large-scale image retrieval* [5]
- *Nearest neighbor search in metric spaces through Content-Addressable Networks* [6]

Expert Systems with Applications

- *Deep learning for decentralized parking lot occupancy detection* [7]

FGCS - Future Generation Computer Systems

- *Distance browsing in distributed multimedia databases* [8]
- *Scalability comparison of Peer-to-Peer similarity search structures* [9]

IJMIR

- *Learning visual features for relational CBIR* [10]

Journal of Grid Computing

- *Distributed video surveillance using smart cameras* [11]

Information Retrieval Journal

- *Picture it in your mind: Generating high level visual representations from textual descriptions* [12]

IS - Information Systems

- *A comparison of pivot selection techniques for permutation-based indexing* [13]

IEEE Multimedia

- *Efficient video-stream filtering* [14]

JOCCH - Journal on Computing and Cultural Heritage

- *Visual recognition of ancient inscriptions using convolutional neural network and fisher vector* [15]
- *Fast image classification for monument recognition* [16]

Conference Proceedings

ICIP

- *Exploiting CNN layer activations to improve adversarial image classification* [17]

ICIAP

- *Hebbian learning meets deep convolutional neural networks* [18]
- *Learning pedestrian detection from virtual worlds* [19]
- *Evaluation of continuous image features learned by ode nets* [20]
- *Improving Multi-scale Face Recognition Using VGGFace2* [21] (BioFor Workshop)

CBMI

- *Learning safety equipment detection using virtual worlds* [22]
- *Testing deep neural networks on the same-different task* [23]

IEEE ISCC

- *Counting vehicles with deep learning in onboard uav imagery* [24]

ISDFS

- *Face verification and recognition for digital forensics and information security* [25]

SISAP

- *An image retrieval system for video* [26]
- *Metric embedding into the hamming space with the n-simplex projection* [27]
- *Splx-perm: A novel permutation-based representation for approximate metric search* [28]

Other Conferences

- *On the robustness to adversarial examples of neural ODE image classifiers* [29]
- *VISIONE at VBS2019* [30]
- *Intelligenza Artificiale, Retrieval e Beni Culturali* [31]
- *Intelligenza Artificiale e Analisi Visuale per la Cyber Security* [32]
- *Intelligenza Artificiale per ricerca in big multimedia data* [33]

ERCIM News

- *Detecting Adversarial Inputs by Looking in the black box* [34]
- *About deep learning, intuition and thinking* [35]

Others

- *AI in the media and creative industries* [36]

Publications by Topic

Deep Learning in Computer Vision

- *About deep learning, intuition and thinking* [35]

Detection, Recognition and Counting

- *Deep learning for decentralized parking lot occupancy detection* [7]
- *Learning pedestrian detection from virtual worlds* [19]
- *Learning safety equipment detection using virtual worlds* [22]
- *Counting vehicles with deep learning in onboard uav imagery* [24]
- *Visual recognition of ancient inscriptions using convolutional neural network and fisher vector* [15]
- *Fast image classification for monument recognition* [16]
- *A comparison of pivot selection techniques for permutation-based indexing* [13]

Adversarial Examples in Computer Vision

- *Adversarial image detection in deep neural networks* [1]
- *On the robustness to adversarial examples of neural ODE image classifiers* [29]
- *Exploiting CNN layer activations to improve adversarial image classification* [17]
- *Detecting Adversarial Inputs by Looking in the black box* [34]

Face recognition and verification

- *Improving Multi-scale Face Recognition Using VGGFace2* [21]
- *Face verification and recognition for digital forensics and information security* [25]
- *Distributed video surveillance using smart cameras* [11]

Relational Learning

- *Learning visual features for relational CBIR* [10]
- *Testing deep neural networks on the same-different task* [23]

ODE networks

- *Evaluation of continuous image features learned by ode nets* [20]

Multimedia Information Retrieval**Image Retrieval**

- *Large-scale instance-level image retrieval* [4]
- *Aggregating binary local descriptors for image retrieval* [2]

Video Retrieval

- *An image retrieval system for video* [26]
- *VISIONE at VBS2019* [30]
- *Efficient video-stream filtering* [14]

Similarity Search and Metric Spaces

- *Metric embedding into the hamming space with the n-simplex projection* [27]
- *Splx-perm: A novel permutation-based representation for approximate metric search* [28]
- *Similarity caching in large-scale image retrieval* [5]
- *A comparison of pivot selection techniques for permutation-based indexing* [13]
- *Building a web-scale image similarity search system* [3]
- *Distance browsing in distributed multimedia databases* [8]
- *Scalability comparison of Peer-to-Peer similarity search structures* [9]
- *Nearest neighbor search in metric spaces through Content-Addressable Networks* [6]

Others

- *Intelligenza Artificiale, Retrieval e Beni Culturali* [31]
- *Intelligenza Artificiale e Analisi Visuale per la Cyber Security* [32]
- *Intelligenza Artificiale per ricerca in big multimedia data* [33]

Publications by Date**2019**

- *Learning visual features for relational CBIR* [10]
- *On the robustness to adversarial examples of neural ODE image classifiers* [29]
- *An image retrieval system for video* [26]
- *Metric embedding into the hamming space with the n-simplex projection* [27]
- *Splx-perm: A novel permutation-based representation for approximate metric search* [28]
- *Exploiting CNN layer activations to improve adversarial image classification* [17]
- *Learning pedestrian detection from virtual worlds* [19]
- *Hebbian learning meets deep convolutional neural networks* [18]
- *Evaluation of continuous image features learned by ode nets* [20]
- *Improving Multi-scale Face Recognition Using VGGFace2* [21]
- *Learning safety equipment detection using virtual worlds* [22]
- *Testing deep neural networks on the same-different task* [23]
- *Large-scale instance-level image retrieval* [4]
- *Counting vehicles with deep learning in onboard uav imagery* [24]
- *Face verification and recognition for digital forensics and information security* [25]

- *AI in the media and creative industries* [36]
- *Distributed video surveillance using smart cameras* [11]
- *Intelligenza Artificiale, Retrieval e Beni Culturali* [31]
- *Intelligenza Artificiale e Analisi Visuale per la Cyber Security* [32]
- *Intelligenza artificiale per ricerca in big multimedia data* [33]
- *Detecting Adversarial Inputs by Looking in the black box* [34]
- *About deep learning, intuition and thinking* [35]
- *Adversarial image detection in deep neural networks* [1]
- *VISIONE at VBS2019* [30]

2018

- *Picture it in your mind: Generating high level visual representations from textual descriptions* [12]
- *Aggregating binary local descriptors for image retrieval* [2]

2017

- *Deep learning for decentralized parking lot occupancy detection* [7]

2016

- *Visual recognition of ancient inscriptions using convolutional neural network and fisher vector* [15]

2015

- *Fast image classification for monument recognition* [16]
- *A comparison of pivot selection techniques for permutation-based indexing* [13]
- *A comparison of pivot selection techniques for permutation-based indexing* [13]

2012

- *Similarity caching in large-scale image retrieval* [5]
- *Building a web-scale image similarity search system* [3]

2009

- *Distance browsing in distributed multimedia databases* [8]

2008

- *Scalability comparison of Peer-to-Peer similarity search structures* [9]
- *Efficient video-stream filtering* [14]
- *Nearest neighbor search in metric spaces through Content-Addressable Networks* [6]

References

- [1] Fabio Carrara, Fabrizio Falchi, Roberto Caldelli, Giuseppe Amato, and Rudy Becarelli. Adversarial image detection in deep neural networks. *Multimedia Tools and Applications*, 78(3):2815–2835, 2019.
- [2] Giuseppe Amato, Fabrizio Falchi, and Lucia Vadicamo. Aggregating binary local descriptors for image retrieval. *Multimedia Tools and Applications*, 77(5):5385–5415, 2018.
- [3] Michal Batko, Fabrizio Falchi, Claudio Lucchese, David Novak, Raffaele Perego, Fausto Rabitti, Jan Sedmidubsky, and Pavel Zezula. Building a web-scale image similarity search system. *Multimedia Tools and Applications*, 47(3):599–629, 2010.
- [4] Giuseppe Amato, Fabio Carrara, Fabrizio Falchi, Claudio Gennaro, and Lucia Vadicamo. Large-scale instance-level image retrieval. *Information Processing & Management*, page 102100, 2019.
- [5] Fabrizio Falchi, Claudio Lucchese, Salvatore Orlando, Raffaele Perego, and Fausto Rabitti. Similarity caching in large-scale image retrieval. *Information processing & management*, 48(5):803–818, 2012.
- [6] Fabrizio Falchi, Claudio Gennaro, and Pavel Zezula. Nearest neighbor search in metric spaces through content-addressable networks. *Information Processing Management*, 44(1):411 – 429, 2008. Evaluation of Interactive Information Retrieval Systems.
- [7] Giuseppe Amato, Fabio Carrara, Fabrizio Falchi, Claudio Gennaro, Carlo Meghini, and Claudio Vairo. Deep learning for decentralized parking lot occupancy detection. *Expert Systems with Applications*, 72:327–334, 2017.
- [8] Fabrizio Falchi, Claudio Gennaro, Fausto Rabitti, and Pavel Zezula. Distance browsing in distributed multimedia databases. *Future Generation Computer Systems*, 25(1):64–76, 2009.
- [9] Michal Batko, David Novak, Fabrizio Falchi, and Pavel Zezula. Scalability comparison of peer-to-peer similarity search structures. *Future Generation Computer Systems*, 24(8):834–848, 2008.
- [10] Nicola Messina, Giuseppe Amato, Fabio Carrara, Fabrizio Falchi, and Claudio Gennaro. Learning visual features for relational cbir. *International Journal of Multimedia Information Retrieval*, pages 1–12, 2019.
- [11] Hanna Kavalionak, Claudio Gennaro, Giuseppe Amato, Claudio Vairo, Costantino Perciante, Carlo Meghini, and Fabrizio Falchi. Distributed video surveillance using smart cameras. *Journal of Grid Computing*, 17(1):59–77, 2019.
- [12] Fabio Carrara, Andrea Esuli, Tiziano Fagni, Fabrizio Falchi, and Alejandro Moreo Fernández. Picture it in your mind: Generating high level visual representations

- from textual descriptions. *Information Retrieval Journal*, 21(2-3):208–229, 2018.
- [13] Giuseppe Amato, Andrea Esuli, and Fabrizio Falchi. A comparison of pivot selection techniques for permutation-based indexing. *Information Systems*, 52:176–188, 2015.
- [14] F. Falchi, C. Gennaro, P. Savino, and P. Stanchev. Efficient video-stream filtering. *IEEE MultiMedia*, 15(1):52–62, Jan 2008.
- [15] Giuseppe Amato, Fabrizio Falchi, and Lucia Vadicamo. Visual recognition of ancient inscriptions using convolutional neural network and fisher vector. *Journal on Computing and Cultural Heritage (JOCCH)*, 9(4):1–24, 2016.
- [16] Giuseppe Amato, Fabrizio Falchi, and Claudio Gennaro. Fast image classification for monument recognition. *Journal on Computing and Cultural Heritage (JOCCH)*, 8(4):1–25, 2015.
- [17] Roberto Caldelli, Rudy Becarelli, Fabio Carrara, Fabrizio Falchi, and Giuseppe Amato. Exploiting cnn layer activations to improve adversarial image classification. In *2019 IEEE International Conference on Image Processing (ICIP)*, pages 2289–2293. IEEE, 2019.
- [18] Giuseppe Amato, Fabio Carrara, Fabrizio Falchi, Claudio Gennaro, and Gabriele Lagani. Hebbian learning meets deep convolutional neural networks. In *International Conference on Image Analysis and Processing*, pages 324–334. Springer, 2019.
- [19] Giuseppe Amato, Luca Ciampi, Fabrizio Falchi, Claudio Gennaro, and Nicola Messina. Learning pedestrian detection from virtual worlds. In *International Conference on Image Analysis and Processing*, pages 302–312. Springer, 2019.
- [20] Fabio Carrara, Giuseppe Amato, Fabrizio Falchi, and Claudio Gennaro. Evaluation of continuous image features learned by ode nets. In *International Conference on Image Analysis and Processing*, pages 432–442. Springer, 2019.
- [21] Fabio Valerio Massoli, Giuseppe Amato, Fabrizio Falchi, Claudio Gennaro, and Claudio Vairo. Improving multi-scale face recognition using vggface2. In *International Conference on Image Analysis and Processing*, pages 21–29. Springer, 2019.
- [22] Marco Di Benedetto, Enrico Meloni, Giuseppe Amato, Fabrizio Falchi, and Claudio Gennaro. Learning safety equipment detection using virtual worlds. In *2019 International Conference on Content-Based Multimedia Indexing (CBMI)*, pages 1–6. IEEE, 2019.
- [23] Nicola Messina, Giuseppe Amato, Fabio Carrara, Fabrizio Falchi, and Claudio Gennaro. Testing deep neural networks on the same-different task. In *2019 International Conference on Content-Based Multimedia Indexing (CBMI)*, pages 1–6. IEEE, 2019.
- [24] Giuseppe Amato, Luca Ciampi, Fabrizio Falchi, and Claudio Gennaro. Counting vehicles with deep learning in onboard uav imagery. In *2019 IEEE Symposium on Computers and Communications (ISCC)*, pages 1–6. IEEE, 2019.
- [25] Giuseppe Amato, Fabrizio Falchi, Claudio Gennaro, Fabio Valerio Massoli, Nikolaos Passalis, Anastasios Tefas, Alessandro Trivilini, and Claudio Vairo. Face verification and recognition for digital forensics and information security. In *2019 7th International Symposium on Digital Forensics and Security (ISDFS)*, pages 1–6. IEEE, 2019.
- [26] Paolo Bolettieri, Fabio Carrara, Franca Debole, Fabrizio Falchi, Claudio Gennaro, Lucia Vadicamo, and Claudio Vairo. An image retrieval system for video. In *International Conference on Similarity Search and Applications*, pages 332–339. Springer, 2019.
- [27] Lucia Vadicamo, Vladimir Mic, Fabrizio Falchi, and Pavel Zezula. Metric embedding into the hamming space with the n-simplex projection. In *International Conference on Similarity Search and Applications*, pages 265–272. Springer, 2019.
- [28] Lucia Vadicamo, Richard Connor, Fabrizio Falchi, Claudio Gennaro, and Fausto Rabitti. Splx-perm: A novel permutation-based representation for approximate metric search. In *International Conference on Similarity Search and Applications*, pages 40–48. Springer, 2019.
- [29] Fabio Carrara, Roberto Caldelli, Fabrizio Falchi, and Giuseppe Amato. On the robustness to adversarial examples of neural ode image classifiers. In *2019 IEEE International Workshop on Information Forensics and Security (WIFS)*, pages 1–6. IEEE, 2019.
- [30] Giuseppe Amato, Paolo Bolettieri, Fabio Carrara, Franca Debole, Fabrizio Falchi, Claudio Gennaro, Lucia Vadicamo, and Claudio Vairo. Visione at vbs2019. In *International Conference on Multimedia Modeling*, pages 591–596. Springer, 2019.
- [31] Lucia Vadicamo, Giuseppe Amato, Paolo Bolettieri, Fabrizio Falchi, Claudio Gennaro, and Fausto Rabitti. Intelligenza artificiale, retrieval e beni culturali. *Ital-IA. CINI*, 2019.
- [32] Claudio Vairo, Giuseppe Amato, Luca Ciampi, Fabrizio Falchi, Claudio Gennaro, and Fabio Valerio Massoli. Intelligenza artificiale e analisi visuale per la cyber security. *Ital-IA. CINI*, 2019.
- [33] Fabio Carrara, Giuseppe Amato, Franca Debole, Marco Di Benedetto, Fabrizio Falchi, Claudio Gennaro, and Nicola Messina. Intelligenza artificiale per ricerca in big multimedia data. *Ital-IA. CINI*, 2019.
- [34] Fabio Carrara, Fabrizio Falchi, Giuseppe Amato, Rudy Becarelli, and Roberto Caldelli. Detecting adversarial inputs by looking in the black box. *ERCIM News, January*, 2019.

- [35] Fabrizio Falchi. About deep learning, intuition and thinking. *ERCIM News, January*, 2019.
- [36] Giuseppe Amato, Malte Behrmann, Frédéric Bimbot, Baptiste Caramiaux, Fabrizio Falchi, Ander Garcia, Joost Geurts, Jaume Gibert, Guillaume Gravier, Hadmut Holken, et al. Ai in the media and creative industries. *arXiv preprint arXiv:1905.04175*, 2019.