Curriculum Vitae
October 2024

Enrico Magli

Full Professor at Politecnico di Torino, Italy

CAREER

2017 – present date: Full Professor at Politecnico di Torino, Dept. of Electronics and Telecommunications.
2016 – present date: founding member and President at ToothPic s.r.l.
2011-2017: Associate Professor (Politecnico di Torino, Italy)
2004-2010: Assistant Professor (Politecnico di Torino, Italy)
2000-2003: Postdoc research fellow (Politecnico di Torino, Italy)
1997-2000: PhD student in Electronics and Communications Engineering (Politecnico di Torino, Italy).

RESEARCH TOPICS

- Deep learning and graph-based neural networks
- Image/video analysis and processing
- Camera identification from optical sensor PRNU

Enrico Magli has carried out scientific research in different areas of signal processing and remote sensing. His research initially focused on compression of satellite images; his work in this area has been recognized by the research community through various awards and citations, and it has influenced private and government agencies to adopt lossy image compression for satellites. Many of his algorithms have been implemented in hardware, commercially deployed by companies, selected in the relevant CCSDS space standards, and adopted by space agencies in operational missions.

Later he worked on compressed sensing in the framework of an ERC grant, developing techniques allowing to perform imaging, compression, encryption and processing within a unified framework. His work on the use of random projections as smart hashes for large-scale retrieval problems has been the subject of an ERC Proof-of-Concept grant, eventually leading to the foundation of a start-up company.

More recently, he has worked on image and video analysis using deep neural networks. Key expertise includes deep learning for satellite image segmentation, graph neural networks for image denoising and point cloud denoising/completion, generative adversarial networks, deep learning for image/video compression and for super-resolution of multiple unregistered images. Recent work includes self-supervised learning methods for SAR image despeckling, which also allow to embed image priors in analytical form. Enrico's expertise is expected to be a key element for the successful development of new techniques for multi-sensor image fusion, as proposed in this project.

Enrico has published over 100 articles in international journals and 200 articles in conference proceedings, 3 books and 6 book chapters. He is also co-inventor in 9 filed patents. The impact of his research is witnessed by his bibliometric indexes, with 8000+ citations and an h-index equal to 45 on Google Scholar as of January 2024.

Google Scholar profile:
https://scholar.google.com/citations?user=G8SHSCgAAAAJ&hl=en&authuser=1

RESEARCH GROUP AND PROFESSIONAL ACTIVITIES

Enrico Magli leads the *Image Processing and Learning* group, which consists of 1 Associate Professor, 1 Assistant Professors, 6 PhD students, 1 postdoc researcher and 2 graduate students, carrying out scientific research in the areas described above.

EDITORIAL ROLES, TECHNICAL COMMITTEES AND CONFERENCE ORGANIZATION

- Senior Associate Editor of IEEE Journal on Selected Topics in Signal Processing, 2022-present
- Associate Editor of IEEE Transactions on Circuits and Systems for Video Technology, 2018-2021.
- Associate Editor of IEEE Transactions on Multimedia, 2014-2018.
- Associate Editor of IEEE Transactions on Circuits and Systems for Video Technology, 2010-2015.
- Associate Editor of EURASIP Journal on Image and Video Processing, 2015-2023.
- Associate Editor of EURASIP Journal on Information Security, 2007-2015.
- Guest co-editor of special issues for IEEE Journal on Selected Topics in Signal Processing, Journal of Applied Remote Sensing, Journal of Visual Communication and Image Representation, EURASIP Journal on Information Security.
- Former chair of "Multimedia Signal Processing" technical committee of IEEE Signal Processing Society (2016-2017), committee member between 2011 and 2016, member of advisory board from 2021.
- Member of "Image, Video and Multidimensional Signal processing" technical committee of IEEE Signal Processing Society (2019-current date), serving as chair of the Awards subcommittee.
- Chair of IEEE Signal Processing Society Italy Chapter (2021-present).
- Member of Italian delegation to the ISO. Has been *co-editor* of JPEG 2000 Part 11 (ISO/IEC 15444-11: JPEG 2000 image coding system: Wireless).
- Member of Consultative Committee on Space Data Systems (CCSDS), as representative of the European Space Agency.
- General co-chair: IEEE MMSP 2013 and IEEE ICME 2015.
- Technical Program Co-Chair: MMSP 2024, ICME 2012, VCIP 2012 e 2014, MMSP 2011, IMAP 2007.

- Area chair: ICME 2017, ICASSP 2016-2017, 2021-2023, ICME 2016, VCIP 2016, ICIP 2014 and 2018, ICME 2011, ICME 2009, Eusipco 2018, ICIAP 2023.
- IEEE Transactions on multimedia best paper award committee: 2020, 2021 and 2023.
- Awards co-chair and Awards committee member for several conferences and journals.

AWARDS AND RECOGNITIONS

- IEEE Fellow from January 2017, with mention "for contributions to compression and communication of remotely sensed imagery".
- Fellow of the ELLIS Society for the advancement of artificial intelligence in Europe (ELLIS) from 2021.
- Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA) from 2022.
- IEEE Distinguished Lecturer for IEEE Circuits and Systems Society (2015-2016).
- IEEE Geoscience and Remote Sensing Society 2011 Transactions Prize Paper Award for article: A. Abrardo, M. Barni, E. Magli, F. Nencini, "Error-resilient and low-complexity onboard lossless compression of hyperspectral images by means of distributed source coding", *IEEE Transactions on Geoscience and Remote Sensing*, Apr. 2010.
- IEEE Multimedia 2019 Best Paper Award for paper "ToothPic: Camera-Based Image Retrieval on Large Scales" by D. Valsesia, G. Coluccia, T. Bianchi, E. Magli.
- Best Student Paper Award (3rd place) at *2015 IEEE International Conference on Image Processing (ICIP)*, as senior author of paper "Predictive graph construction for image compression", by G. Fracastoro and E. Magli.
- Best Paper Award at *2019 IEEE International Conference on Image Processing (ICIP)* for article "Image denoising with graph-convolutional neural networks".
- 2010 Best Reviewer Award for *IEEE Journal of Selected Topics in Applied Earth Observation and Remote Sensing.*
- 2011 and 2014 Best Associate Editor Award for *IEEE Transactions on Circuits and Systems for Video Technology.*
- Enrico has received an ERC Starting Grant (consolidator type) for project "CRISP - Towards compressive information processing systems" (2011-2016) and an ERC proof-of-concept grant for project "ToothPic - A large-scale camera identification system based on compressed fingerprints" (2016-2017).
- Has been invited as "plenary panelist" at 2011 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), for a discussion on the topic "New trends in Multimedia Signal Processing".
- Has been invited as panelist at the roundtable "Deep Learning in On-Board Systems" at the OnBoard Data Processing workshop (OBDP) 2019.
- Has been invited as panelist at the roundtable "Novel compression approaches: AI, is it the one to rule them all?" at the OnBoard Payload Data Compression workshop (OBPDC) 2022.
- Has been keynote speaker at the 9th IEEE International Symposium on Intelligent Signal Processing, Siena, Italy, May 15-17, 2015.
- Has been keynote speaker at the 2018 Onboard Payload Data Compression workshop (Matera, Italia).
- Has been plenary speaker at the workshop on Computational Intelligence in Remote Sensing and Astrophysics (Crete, July 2019).
- Has been keynote speaker at the EUVIP 2023 workshop.

- Has been member of the team that won the 2019 challenge organized by the European Space Agency on the topic: "PROBA-V super-resolution".
- Has been member of the team that won the European Space Agency AI4EO challenge on "Super-resolved image segmentation for Enhanced Sentinel 2 Agriculture", 2021.
- Has been panelist at MMSP 2023 Students and Young Professionals panel.

TECHNOLOGY TRANSFER

Upon successful completion of an ERC proof-of-concept grant, Enrico has co-founded ToothPic, a high-tech start-up in the field of cybersecurity, where he has the role of President. ToothPic develops cutting-edge solutions for smartphone-based authentication to services over the Internet. The start-up has received a seed funding of 300 k€ from Venture Factory in 2018, and it is expected to collect extra funding for 800 k€ within the end of 2020.