Matteo Testa, PhD

Machine Learning research Engineer

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Currently

I'm a Research Engineer at Unicredit Research and Development (R&D) group, based in Milan, Italy. Here I develop prototypes and use deep learning and statistics to solve challenging computer vision tasks. My research background ranges from image compression and processing (e.g. denoising, inpainting) to deep learning for face authentication.

Employment

July 19– **Unicredit R&D** *Research Engineer* (Machine Learning for Computer Vision tasks). Detection, extraction and processing of information from visual data through statistical, and deep learning approaches.

2017–19 **Politecnico di Torino** *PostDoctoral researcher* on Deep Learning (Computer Vision/Face Recognition), funded by SONY EuTec. Publications [C1],[C2]

2017–19 **Politecnico di Torino** *PostDoctoral researcher* on Signal Processing (Random projections for security applications), funded by SONY EuTec. Publications [B1],[J1], [C3], [C4]

Education

2013–16 **Politecnico di Torino** *PhD in Electronics and Telecommunications* (supervisor: prof. Enrico Magli). Topics: Bayesian Inference, Dictionary Learning, Multimedia signal processing and Compressed Sensing.

2015–15 **Universidad de Granada (Spain)** *PhD internship* at VIP lab (supervisor: prof. Rafael Molina). I worked on Image Processing tasks (e.g., denoising and inpainting) through Variational Bayes inference.

2011–12 **Politecnico di Torino** *MSc Telecommunications Engineering* (110/110). Main topics: Image and video coding, Signal processing, Information theory and codes

2007–11 **Politecnico di Torino** *BSc Telecommunications Engineering* (103/110)

Presentations

Talks and posters

2019 AuthNet: biometric authentication through adversarial learning (*4th SmartData Workshop*, Turin, Italy)

2018 On the secrecy of compressive cryptosystems under finite-precision representation of sensing matrices (*IEEE International Conference on Circuits and Systems (ISCAS)*, Florence, Italy)

2017 Energy obfuscation for compressive encryption and processing (*IEEE Workshop on Information Forensics and Security (WIFS)*, Rennes, France)

2016 Compressive classification based on autoregressive features (*International Conference on Communications (COMM)*, Bucharest, Romania)

2015 Autoregressive process parameter estimation from compressed sensing measurements (*49th Asilomar Conference on Signals, Systems and Computers*, Asilomar - CA, USA)

Distributed covariance estimation for compressive signal processing (*49th Asilomar Conference on Signals, Systems and Computers*, Asilomar - CA, USA)

Publications

Books

[B1] **M. Testa**, D. Valsesia, T. Bianchi, E. Magli *"Compressed Sensing for Privacy-Preserving Data Processing"* SpringerBriefs in Signal Processing, Springer, 2019

Journals

[J1] **M. Testa**, T. Bianchi and E. Magli *"Secrecy Analysis of Finite-Precision Compressive Cryptosystems"* IEEE Transactions on Information Forensics and Security, 2019

[J2] **M. Testa**, and E. Magli *"Compressive Bayesian K-SVD"* Signal Processing: Image Communication, 2018

[J3] J. Serra, **M. Testa**, R. Molina, A. K. Katsaggelos *"Bayesian K-SVD Using Fast Variational Inference"* IEEE Transactions on Image Processing, 2017

[J4] **M. Testa**, E. Magli *"Compressive estimation and imaging based on autore-gressive models"* IEEE Transactions on Image Processing, 2016

Conferences

[C0] A. Ali, **M. Testa**, T. Bianchi and E. Magli *"BioMetricNet: deep unconstrained face verification through learning of metrics regularized onto Gaussian distributions"* submitted at ECCV20

[C1] **M. Testa**, A. Ali, T. Bianchi and E. Magli *"Learning mappings onto regularized latent spaces for biometric authentication"* IEEE 29th International Workshop on Machine Learning for Signal Processing (MLSP), 2019, Pittsburgh, PA, USA

[C2] A. Ali, **M. Testa**, T. Bianchi and E. Magli *"AuthNet: Biometric Authentication through Adversarial Learning"* IEEE 21st International Workshop on Multimedia Signal Processing (MMSP), Kuala Lumpur, Malaysia

[C3] **M. Testa**, T. Bianchi, E. Magli *"On the Secrecy of Compressive Cryptosystems Under Finite-Precision Representation of Sensing Matrices"* International Symposium on Circuits and Systems (ISCAS), 2018, Florence

[C4] **M. Testa**, T. Bianchi, E. Magli *"Energy Obfuscation for Compressive Encryption and Processing"* IEEE Workshop on Information Forensics and Security (WIFS), 2017, Rennes

[C5] **M. Testa**, E. Magli *"Compressive classification based on autoregressive features"* Communications (COMM), 2016 11th International Conference on, Bucharest

[C6] **M. Testa**, E. Magli *"Distributed covariance estimation for compressive signal processing"* 2015 49th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, 2015, pp. 676-680.

[C7] **M. Testa**, E. Magli *"Autoregressive process parameter estimation from compressed sensing measurements"* 2015 49th Asilomar Conference on Sig- nals, Systems and Computers, Pacific Grove, CA, 2015, pp. 488-492.

Teaching

2017–19 **Multimedia Signal Processing, MSc course** Topics: Image coding (lossless and lossy schemes) and Neural Networks, Politecnico di Torino

Technical skills

Python	Pytorch	LaTeX
Matlab	Pandas	Docker
Tensorflow	Numpy	

Areas of expertise

Machine learning
Deep Generative Models (GAN)
Image processing
Bayesian inference and statistics

Awards

NVIDIA GPU Grant Awarded with a NVidia Quadro P6000 to support my Deep Learning research project

PhD Quality Award Top 3 XXVIII cycle PhD student at Department of Electronics and Telecommunication, Politecnico di Torino

PhD scholarship Politecnico di Torino

Editorial activity

2015– Served as a reviewer for IEEE Transactions on Circuits and Systems for Video Technology, Signal Processing: Image Communication, Journal of Visual Communication and Image Representation, Digital Signal Processing

Links

LinkedIn Google scholar ORCiD

References

Available on request.