SIMONE ZINI

Ph.D. in Computer Science
Expert in machine learning, image processing and digital camera algorithms

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EXPERIENCE

Research fellow
Imaging and Vision Laboratory – University of Milano - Bicocca

📅 January 2018 – Present   📍 Milano, Lombardy, Italy

Research in Machine Learning and Deep Learning field for approaches for Image Processing and Enhancement.
Personal page: http://www.ivl.disco.unimib.it/people/simone-zini/

Postdoctoral Research fellow
National Institute for Nuclear Physics (INFN)

📅 January 2022 – Present   📍 Milano, Lombardy, Italy

Research in Machine Learning and Deep Learning approaches for remote sensing image enhancement and restoration.

Ph.D. Visiting Student - Computer Vision Center
Universitat Autònoma de Barcelona

📅 March 2021 – September 2021   📍 Barcelona, Spain

Research in the topic of unsupervised learning and latent space representation of color image information.

Researcher with Grant
University of Milano - Bicocca

📅 June 2018 – October 2018   📍 Milano, Italy

Research at Imaging and Vision Laboratory (IVL) on Convolutional Neural Networks for image quality analysis, processing and enhancement.

Research Internship
NEC Central Research Laboratories

📅 January 2018 – May 2018   📍 Kawasaki, Kanagawa, Japan

- Development of remote sensing methods oriented to image recognition.
- Computer vision algorithms for satellite images enhancement, semantic segmentation and image captioning

ABOUT ME

Postdoc fellow at IVL Laboratory | University of Milano - Bicocca.
Interested in Machine Learning applied to Digital Signal Processing, Digital Imaging and Computational Photography.

SKILLS

Image Processing & Enhancement
Computer Vision   Machine Learning
Neural Networks   Signal Processing
Convolutional Neural Networks
Computational Photography

Python   Pytorch   Matlab   C++
Linux/Bash   VHDL/VeriLog   Arduino

LaTex   Gimp   Inkscape   Darktable
Adobe Photoshop   Adobe Illustrator
Adobe Ligthroom

LANGUAGES

Italian ●●●●●

English ●●●●○

Spanish ●●○○○

OTHER INTERESTS

Photography
Digital photography and photo editing

Hiking and Travelling
Mountain hiking, travel photography.

Drawing & Illustration
Analogical and digital illustration

EDUCATION

Ph.D. in Computer Science
University of Milano - Bicocca

📅 November 2018 – May 2022 📍 Milano, Italy

Thesis title: "Image Enhancement and Restoration using Machine Learning Techniques." Research topics: Image Processing and Enhancement, Computer Vision, Digital Signal Processing , Computational Photography, Image Quality, Machine Learning and Artificial Intelligence.

ICVSS 2019
International Computer Vision Summer School

📅 07 – 13 July 2019 📍 Scicli (Ragusa), Italy

https://iplab.dmi.unict.it/icvss2019/Home

M.Sc. in Computer Science
University of Milano - Bicocca

📅 November 2015 – July 2018 📍 Milano, Italy

Thesis title: Single Image Super-Resolution using Convolutional Neural Networks

B.Sc. in Computer Science
University of Milano - Bicocca

📅 October 2012 – July 2015 📍 Milano, Italy

Thesis title: Design of a tool for simulation and analysis of Petri Net's

Courses and Schools

"Starting a Grant proposal: from idea to practice" Summer School
Lake Como School of Advanced Studies

📅 18-22 July, 2022 📍 Como,Italia

"Memory Networks", prof. Alberto del Bimbo, dr. Federico Becattini.
AI Doctoral Academy (AIDA) program.

📅 30 Aprile - 7 Maggio 2021 📍 Firenze, Italia (online)

PROJECTS PARTICIPATION

Pignoletto Project "Earth monitoring for precision agriculture adopting remote sensing systems"
Call HUB Innovation and Research, promoted by Regione Lombardia.

📅 2021-2022

"User Specific Contrast Enhancement Technology for Mobile Platforms"
Research agreement with Huawei Technologies Co. Ltd - Saint-Petersburg Research Center.

📅 2021 - presente

REFEREES

Prof. Raimondo Schettini
@ University of Milano - Bicocca
✉ schettini@disco.unimib.it
Viale Sarca, 336
20126 - Milano, Italy

Prof. Simone Bianco
@ University of Milano - Bicocca
✉ simone.bianco@disco.unimib.it
Viale Sarca, 336
20126 - Milano, Italy

"Classification-based Automatic White Balancing"

Research agreement with Huawei Technologies Co. Ltd - Moscow Research Center.

📅 2020 - 2021

"Algorithms for semantic indexing and visualization of photo archives"

Research agreement with Canon Europe Ltd.

📅 2018 - 2019

"Food Design Arte - L'Arte del Benessere (FooDesArt)"

Research project promoted by Regione Lombardia.

📅 June - November 2018

"LFP Digital Signal Processing System"

University of Milano - Bicocca

📅 April - September 2016

System for analysis of neural signals through FPGA board for medical experiments. Code written in MATLAB (for simulations and UI) and VHDL (for FPGA chip definition).

AWARDS

NVIDIA Academic Grant 2022

Obtained for the project entitled "Temporal Color Constancy based on CNN and Memory Networks."

NVIDIA Academic Grant 2018

Obtained for the project entitled "Single-Image Super-Resolution and Artifact removal with Convolutional Neural Networks for image restoration and enhancement."

TALKS AND TEACHING

Workshop speaker

Huawei Spectral Color Imaging Technologies Workshop

📅 11th – 12th November 2021   📍 Moscow

Speaker at Huawei Spectral Color Imaging Technologies Workshop 2021. Talk title: "Video color constancy". Definition of the Temporal Color Constancy task, analysis of color temporal stability and presentation of lightweight Temporal Color Constancy proposed approach.

Guest lecturer

Advanced Colour and Image Processing COSI course - Comptutational Colour and Spectral Imaging (COSI)

📅 March 2021 and 2022   📍 Granada, Spain

Lesson on Image Restoration and Enhancment for single images in bad weather conditions.

M2L Summer School Tutor

Mediterranean Machine Learning (M2L) Summer School

📅 Academic Year 2020–2021

Tutor at the summer school Mediterranean Machine Learning (M2L), organized by Deep Mind Lab., in 2020. Preparation and frontal laboratory lessons on Computer Vision and Generative Adversarial Networks.

Invited speaker

Color: from images to videos - Color & Imaging Conference (CIC) 2021

📅 3 Novembre 2021   📍 New York (online)

Talk about the application of Deep Learning based approaches for Color Constancy in single-image and video scenarios.

University teacher
Basics of Computer Science
📅 Academic Year 2022–2023

Laboratory teacher of the university course "Elements of Computer Science" for the Theory and Technology of Communication (TTC) master degree.

University tutor
Digital Signal and Image Management
📅 Academic Years 2019–2020 / 2020–2021

Tutor of the university course "Digital Signal and Image Management" for master degree in "Data Science".

University tutor
Data Bases
📅 Academic Year 2020–2021 / 2021-2022 / 2022-2023

Tutor of the university course "Data Bases" for master degree in "Computer Science".

PUBLICATIONS

📄 Journal Articles

- M. Buzzelli, S. Zini, S. Bianco, G. Ciocca, R. Schettini, and M. K. Tchobanou, "Analysis of biases in automatic white balance datasets and methods," *Color Research & Application*, vol. 48, no. 1, pp. 40–62, 2023.
- S. Zini and M. Buzzelli, "Laplacian encoder-decoder network for raindrop removal," *Pattern Recognition Letters*, vol. 158, pp. 24–33, 2022.
- S. Zini, M. Buzzelli, S. Bianco, and R. Schettini, "Cocoa: Combining color constancy algorithms for images and videos," *IEEE Transactions on Computational Imaging*, 2022.
- S. Zini, C. Rota, M. Buzzelli, S. Bianco, and R. Schettini, "Shallow camera pipeline for night photography rendering," *arXiv preprint arXiv:2204.08972*, 2022.
- S. Zini, S. Bianco, and R. Schettini, "Deep residual autoencoder for blind universal jpeg restoration," *IEEE Access*, vol. 8, pp. 63 283–63 294, 2020.

👥 Conference Proceedings

- S. Zini, A. Gomez-Villa, M. Buzzelli, B. Twardowski, A. D. Bagdanov, *et al.*, "Planckian jitter: Countering the color-crippling effects of color jitter on self-supervised training," in *Accepted at International Conference on Learning Representations - ICLR 2023*, 2023.
- E. Ershov, A. Savchik, D. Shepelev, *et al.*, "Ntire 2022 challenge on night photography rendering," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2022, pp. 1287–1300.
- S. Zini, M. Buzzelli, S. Bianco, and R. Schettini, "A framework for contrast enhancement algorithms optimization," in *2022 IEEE International Conference on Image Processing (ICIP)*, IEEE, 2022, pp. 1431–1435.
- S. Bianco, M. Buzzelli, G. Ciocca, R. Schettini, M. Tchobanou, and S. Zini, "Analysis of biases in automatic white balance datasets," in *Proceedings of the International Colour Association (AIC) Conference 2021. Milan, Italy. AIC*, 2021, pp. 233–238.
- S. Zini and M. Buzzelli, "On the impact of rain over semantic segmentation of street scenes," in *International Conference on Pattern Recognition*, Springer, 2021, pp. 597–610.
- S. Zini, S. Bianco, and R. Schettini, "Cnn-based rain reduction in street view images," in *London Imaging Meeting*, Society for Imaging Science and Technology, vol. 2020, 2020, pp. 78–81.
- S. Zini and M. Buzzelli, "On the impact of rain over semantic segmentation of street scenes.," in *ICPR Workshops (6)*, 2020, pp. 597–610.
- A. Abdelhamed, R. Timofte, and M. S. Brown, "Ntire 2019 challenge on real image denoising: Methods and results," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops*, 2019.
- T. Toizumi, S. Zini, K. Sagi, E. Kaneko, M. Tsukada, and R. Schettini, "Artifact-free thin cloud removal using gans," in *2019 IEEE International Conference on Image Processing (ICIP)*, IEEE, 2019, pp. 3596–3600.