Silvia Cascianelli

Curriculum Vitae

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Resume

Silvia Cascianelli received her European PhD degree in Industrial and Information Engineering from the University of Perugia in 2019, working on Deep Learning-based knowledge representation methods for service robotics applications (localization, scene understanding and description). During the same period, she also collaborated with the Department of Surgical and Biomedical Sciences at the University of Perugia on Computer Aided Diagnosis in the field of Nuclear Medicine, Radiology and Clinical Analysis based on Machine Learning and Computer Vision techniques. In 2018, she was Visitor Researcher at Queen Mary University of London, working on Natural Language Processing and Computer Vision approaches for robotic applications (scene understanding and Visual Question Answering for human-robot interaction). Currently, she is an Assistant Professor at the University of Modena and Reggio Emilia. She has co-authored more than 50 scientific papers in journals and international conferences and serves as AE for the IEEE RA-L, Diversity Chair for ACM-MM 2022, and AC for ECCV 2024. Her research interests concern Document AI, Generative AI, Multimedia, and Deep Learning for Digital Humanities and Cultural Heritage.

Research Positions

Feb. 2020 – now   **Assistant Professor (RTD-A)**, *University of Modena and Reggio Emilia, Department of Engineering "Enzo Ferrari"*, Modena, Italy.
Study and development of Computer Vision and Artificial Intelligence algorithms for Image Generation, Document Analysis, Autonomous Robotics, and integration of Vision and Language for understanding and preserving, understanding, and enhancing cultural heritage and digital humanities visual and textual data.

Dec. 2018 – Dec. 2019   **Post-Doc Researcher**, *University of Perugia, Department of Engineering*, Perugia, Italy.
Study and mathematical modelling of the internal logistics management policies of the project partner companies. Development of process optimisation algorithms and integration of the into the management systems of the partner companies, including transfer to the internal staff and dissemination of results.

Nov. 2017 – May 2018   **Visiting Researcher**, *Queen Mary University of London, School of Electronic Engineering and Computer Science*, London, UK.
Research and study on Natural Language Processing and Computer Vision approaches for Service Robotics applications. The work focused on the introduction of new algorithms to provide robots with the ability to understand their environment and answer questions about it to facilitate human-robot interaction.

Nov. 2015 – Nov. 2018   **PhD Student**, *University of Perugia, Department of Engineering*, Perugia, Italy.
Research and study on Machine Learning and Computer Vision approaches for Robotics applications. The work focused on the introduction of new algorithms and strategies to provide robots with the ability to navigate, learn and describe their environment.

Research Projects

Funded Projects

Vision and Language-based Human-Robot Interaction on partially unknown environments, *Fondo di Ateneo per la Ricerca 2021, University of Modena and Reggio Emilia*.
Principal Investigator

EVARetail: Evolutionary Video Analysis for Retail 4.0, *Bando Post-Doc della Fondazione Cassa di Risparmio di Trento e Rovereto*.
Principal Investigator

VLEmb - Towards Visual-Language Interaction between Embodied Agents and Humans, *Research project funded by CINECA for the Italian SuperComputing Resource Allocation (ISCRA) initiative, class B*.
Co-Principal Investigator

Collaboration and Participation in Research Projects

AI for Digital Humanities, *Research project funded by Fondazione di Modena*.

Digital Watermarking for enhancing perceptual quality, *Industrial project with Memooria s.r.l.*.

European Training Network on PErsonalized Robotics as SErvice Oriented applications (PERSEO), *European project H2020 MSCA-ITN-2020 (G.A. 955778). EU - Horizon 2020 research and innovation program under the Marie Curie grant agreement*.

IDEHA: Innovation for Data Elaboration in Heritage Areas, *National research project (PON ARS01 00421), funded by the Italian Ministry of University and Research*.

Artificial Intelligence for Cultural Heritage, *National research project funded by the Italian Ministry of Foreign Affairs and International Cooperation*.

ROADSTER: Road Sustainable Twins in Emilia Romagna, *Research project funded by the International Foundation Big Data and Artificial Intelligence for Human Development*.

DHMoRe Lab, *Research project funded by Regione Emilia Romagna*.

Affiliation to Research Centers

European Laboratory for Learning and Intelligent Systems - Modena Unit (Modena@ELLIS Unit), Modena, Italy.

Artificial Intelligence Research and Innovation Center (AIRI), Modena, Italy.

NVIDIA AI Technology Center of Modena, Modena, Italy.

Centro Interdipartimentale di Ricerca sulle Digital Humanities (DHMoRe), Modena, Italy.

Editorial and Organization Activities

2024   **Area Chair**, European Conference on Computer Vision.

Area Chair, British Machine Vision Conference.

Workshop Organizer, *AI4DH: Artificial Intelligence for Digital Humanities*, European Conference on Computer Vision.

Workshop Organizer, *ADAPDA: Automatically Domain-Adapted and Personalized Document Analysis*, International Conference on Document Analysis and Recognition.

2023   **Workshop Organizer**, *ADAPDA: Automatically Domain-Adapted and Personalized Document Analysis*, International Conference on Document Analysis and Recognition.

Workshop Organizer, *AI4DH: Artificial Intelligence for Digital Humanities*, International Conference on Image Analysis and Processing.

Session Chair, *Vision and Language*, British Machine Vision Conference.

2022   **Diversity Chair**, ACM International Conference on Multimedia.

Invited Session Chair, *Feature Interpretability in Visual Recognition*, International Conference on Knowledge-Based and Intelligent Information and Engineering Systems.

Workshop Organizer, *AI4DH: Artificial Intelligence for Digital Humanities*, International Conference on Image Analysis and Processing.

Tutorial Organizer, *Vision and Language: From Captioning to Embodied AI*, International Conference on Image Analysis and Processing.

Publicity Commitee Member, International Conference on Control, Automation and Diagnosis.

Session Chair, *Object Detection and Recognition*, International Conference on Pattern Recognition.

2022 - now   **Commitee Member**, *Equality, Diversity and Inclusion Committee*, International Association for Pattern Recognition (IAPR).

2021 - now   **Associate Editor**, *IEEE Robotics and Automation Letters*, IEEE RAS.

Session Chair, *Computer vision, robotics and intelligent systems*, International Conference on Pattern Recognition.

2020   **Guest Editor**, *Applied Statistics in Engineering*, MDPI Stats.

Poster Session Chair, *Computer vision, robotics and intelligent systems*, International Conference on Pattern Recognition.

2020 - 2021 **Publicity Commitee Chair**, International Conference on Control, Automation and Diagnosis.

Selected Pubblications

Citations: 889; h-index: 15 (source: Google Scholar, on 13 June 2024).

2024 **Binarizing Documents by Leveraging both Space and Frequency**, *F.Quattrini, V. Pippi, S. Cascianelli, R. Cucchiara*, ICDAR.

Merging and Splitting Diffusion Paths for Semantically Coherent Panoramas, *F.Quattrini, V. Pippi, S. Cascianelli, R. Cucchiara*, under review.

VATr++: Choose Your Words Wisely for Handwritten Text Generation, *B. Vanherle, V. Pippi, S. Cascianelli, N. Michiels, F. Van Reeth, R. Cucchiara*, under review.

2023 **Handwritten Text Generation from Visual Archetypes**, *V. Pippi, S. Cascianelli, R. Cucchiara*, CVPR.

Volumetric Fast Fourier Convolution for Detecting Ink on the Carbonized Herculaneum Papyri, *V. Pippi, F.Quattrini, S. Cascianelli, R. Cucchiara*, ICCV - Workshops.

HWD: A Novel Evaluation Score for Styled Handwritten Text Generation, *F.Quattrini, V. Pippi, S. Cascianelli, R. Cucchiara*, BMVC.

Evaluating Synthetic Pre-Training for Handwriting Processing Tasks, *V. Pippi, S. Cascianelli, L. Baraldi, R. Cucchiara*, Pattern Recognit. Lett. .

How to Choose Pretrained Handwriting Recognition Models for Single Writer Fine-Tuning, *V. Pippi, S. Cascianelli, C. Kermorvant, R. Cucchiara*, ICDAR.

Embodied Agents for Efficient Exploration and Smart Scene Description, *R. Bigazzi, M. Cornia, S. Cascianelli, L. Baraldi, R. Cucchiara*, ICRA.

2022 **From Show to Tell: A Survey on Deep Learning-based Image Captioning**, *M. Stefanini, M. Cornia, L. Baraldi, S. Cascianelli, G. Fiameni, R. Cucchiara*, IEEE Trans. Pattern Anal. Mach. Intell.

Focus on Impact: Indoor Exploration with Intrinsic Motivation, *R. Bigazzi, F. Landi, S. Cascianelli, L. Baraldi, M. Cornia, R. Cucchiara*, IEEE Robot. Autom. Lett.

Boosting Modern and Historical Handwritten Text Recognition with Deformable Convolutions, *S. Cascianelli, M. Cornia, L. Baraldi, R. Cucchiara*, Int. J. Doc. Anal. Recognit.

The LAM Dataset: A Novel Benchmark for Line-Level Handwritten Text Recognition, *S. Cascianelli, V. Pippi, M. Maarand, M. Cornia, L. Baraldi, C. Kermorvant, R. Cucchiara*, ICPR.

CaMEL: Mean Teacher Learning for Image Captioning, *M. Barraco, M. Stefanini, M. Cornia, S. Cascianelli, L. Baraldi, R. Cucchiara*, ICPR.

Spot the Difference: A Novel Task for Embodied Agents in Changing Environments, *F. Landi, R. Bigazzi, M. Cornia, S. Cascianelli, L. Baraldi, R. Cucchiara*, ICPR.

The Unreasonable Effectiveness of CLIP Features for Image Captioning: An Experimental Analysis, *M. Barraco, M. Cornia, S. Cascianelli, L. Baraldi, R. Cucchiara*, CVPR - Workshops.

2021 **Wind Turbine Power Curve Monitoring Based on Environmental and Operational Data**, *S. Cascianelli, D. Astolfi, F. Castellani, R. Cucchiara, M. L. Fravolini*, IEEE Trans. Ind. Inform.

2020 **Combining domain adaptation and spatial consistency for unseen fruits counting: a quasi-unsupervised approach**, *E. Bellocchio, G. Costante, S. Cascianelli, M. L. Fravolini, P. Valigi*, IEEE Robot. Autom. Lett.

Explore and Explain: Self-supervised Navigation and Recounting, *R. Bigazzi, F. Landi, M. Cornia, S. Cascianelli, L. Baraldi, R. Cucchiara*, ICPR.

Watch Your Strokes: Improving Handwritten Text Recognition with Deformable Convolutions, *I. Cojocaru, S. Cascianelli, L. Baraldi, M. Corsini, R. Cucchiara*, ICPR.

2019 **The Role of the Input in Natural Language Video Description**, *S. Cacianelli, G. Costante, A. Devo, T. A. Ciarfuglia, P. Valigi, M. L. Fravolini*, IEEE Trans. Multimed.

2018 **Full-GRU Natural Language Video Description for Service Robotics Applications**, *S. Cascianelli, G. Costante, T. A. Ciarfuglia, P. Valigi, M. L. Fravolini*, IEEE Robot. Autom. Lett.

2017 **Robust visual semi-semantic loop closure detection by a covisibility graph and CNN features**, *S. Cascianelli, G. Costante, E. Bellocchio, P. Valigi, M. L. Fravolini, T. A. Ciarfuglia*, Robot. Auton. Syst.

Pursuant to articles 46 and 47 of Presidential Decree 445/2000, the undersigned Silvia Cascianelli, born in Perugia (PG) on 04/01/1991 and resident in Gualdo Cattaneo (PG), zip code 06035, Via Del Puglia n.2, aware that the mendacious declarations are punished to the senses of the penal code and the special laws in the matter, declares that the information given in the present document conforms to the truth.
In faith,

Modena, 14 June 2024

Silvia Cascianelli