Alessio Del Bue

CONTACT
INFORMATION

Istituto Italiano di Tecnologia (IIT)
Pattern Analysis and Computer Vision
Via Enrico Melen 83
Genova, 16152
Italy

WWW: https://pavis.iit.it/

EDUCATION

Queen Mary University of London

Ph.D. Candidate, Computer Science, September 2002 – August 2006

- Dissertation Topic: "Non-rigid 3D Modelling from Uncalibrated Video Sequences"
- Advisor: Lourdes de Agapito Vicente

University of Genova, Italy

M.S., Telecommunication Engineering, April, 2002
B.S., Electronic Engineering, February, 2000

- Master Thesis Topic: "Real time MPEG-4 encoding for smart cameras".
- Advisors: Carlo Regazzoni, Dorin Comaniciu

RESEARCH
EXPERIENCE

Istituto Italiano di Tecnologia (IIT)

Senior Researcher Tenured, Director of PAVIS research line **August 2019 - ongoing**
Leading the Pattern Analysis and Computer Vision (PAVIS) research lines of the Istituto Italiano di Tecnologia with a group formed by approximately 32 research staff members (2 Researchers, 8 Postdocs, 11 PhDs, 2 Technicians and 2 External collaborators) working on Computer Vision and Machine Learning research topics. The main drive of the department is to research Artificial Intelligence (AI) approaches that can understand spatial arrangement and the dynamic of things (Spatial AI) and decoding the social behaviour of people (Social AI) from multi-modal cues.

Visiting Professor **December, 2019**
One month Invited Professorship at University of Adelaide, AIML, Australia.

Senior Researcher Tenured **May 2019 - July 2019**
Head of the Visual Geometry and Modelling (VGM) research lines of the Istituto Italiano di Tecnologia – IIT. The group was formed by approximately 10 research staff working on 3D scene understanding from images and other sensor modalities. Main research topics are related to Computer Vision, Signal Processing, and Artificial Intelligence.

Tenure-track Researcher **May 2014 - April 2019**
Head of the Visual Geometry and Modelling (VGM) Lab at the Pattern Analysis and Computer Vision Department (PAVIS) of the Istituto Italiano di Tecnologia – IIT. The group is formed by 3 postdocs and 3 Ph.D. students working on Computer Vision, Signal Processing and Machine Learning. The main aim of the lab is to deliver top-level research on 3D reconstruction from images, dynamic scene understanding and 3D localisation/detection from audio and video. The VGM Lab has also strong activities in Technology Transfer collaborating with world leader companies in machine vision, avionics, energy and textiles fields.

Team Leader **July 2012 - April 2014**
Team Leader position at the Pattern Analysis and Computer Vision (PAVIS) of the Istituto Italiano di Tecnologia – IIT. The main objectives were the consolidation of the most promising research lines of the group and writing proposals to secure funding for the expansion of the department. A more consistent supervision of students and postdocs was required given the increased size of the

department.

Postdoc Senior **February, 2010 - June 2012**

Senior Postdoc position at the Pattern Analysis and Computer Vision (PAVIS) of the Istituto Italiano di Tecnologia – IIT. The main duties were related to a close interaction with the head of the department and team leaders in the setup of the research lines of the newborn group. Other duties were the co-supervision of Ph.D and master students.

Instituto de Sistemas e Robotica (ISR)

Auxiliary Researcher **September, 2006 - January 2010**

Researcher in the Signal and Image Processing Group (SIPG) in Instituto de Sistemas e Robotica (ISR) of Instituto Superior Tecnico (IST). The main research projects were related to non-rigid 3D reconstruction from images and automatic art analysis.

Visiting Professor **May, 2009**

One month Invited Professorship at University Blaise-Pascal, LASMEA laboratory, Clermont-Ferrand, France.

Visiting Researcher **June, 2006 - September, 2006**

Visiting Researcher in the Signal and Image Processing Group in Instituto de Sistemas e Robotica (ISR) of Instituto Superior Tecnico (IST).

Queen Mary University

Temporary Lecturer **September, 2005 - January 2006**

Tutor for the Open Distance Learning (ODL) unit of the Department of Computer Science at Queen Mary University. Responsible for delivering teaching material, coordinate teaching assistants and prepare courseworks/exams material.

Teaching Assistant **September, 2002 - September 2005**

Responsible for assisting the laboratory classes for the first year undergraduate courses of Computer Architecture (DCS111) and Object Oriented Programming (DCS104).

Siemens Corporate Research, Princeton, New Jersey, USA

Internship **February, 2001 - September, 2001**

Research and development of a real-time face tracking system with MPEG-4 selective compression. Study of the Mean Shift paradigm for temporal video analysis. Supervision of Dr. Dorin Comaniciu.

INDUSTRIAL
PROJECTS AND
TECHNOLOGY
TRANSFER

Dompe' **October 2022 — September 2024**

The project aims at developing Machine Learning approaches for temporal series prediction and deep learning models for free energy computation for molecules binding.

Camozzi-Marzoli joint lab **January 2019 — January 2023**

The project aims at developing Artificial Intelligence approaches for Yarn quality inspection to improve and optimise the textile industrial production.

Ansaldo **January 2018 — June 2021**

The project aims to further automatise the procedure for inspection inside gas turbines using digital tools and AI methods for crack inspection of tiles.

Luxottica **January 2018 — December 2020**

This industrial project targets the eyewear industry to provide a visual inspection system for defect

detection and geometric check of eyewear with different materials and styles.

Brunello Cucinelli **September 2017 — November 2018**

This collaboration project targets the luxury fashion industry to provide a visual inspection system for defect detection and geometric check of textiles with very complex patterns.

Ansaldo Energia **January 2017 — December 2017**

The project is related to the visual inspection of gas chamber turbines to assess with machine learning methods the state of degradation of the internal parts of the turbine.

Omron Research **May 2014 — October 2018**

This long-standing collaboration between the Japanese company OMRON, a world leader for machine vision automation, and IIT is related to research and develop methods for active vision in robotic platforms.

AvioAero **May 2014 — March 2016**

This project on aeronautic parts inspection was dedicated to the analysis of external and inner components of gearboxes using an endoscope.

RESEARCH GRANTS AND AWARDS

2023 - PAVIS won 1st place at the CVPR 2023 Ego4D competition on the object interaction anticipation challenge (CVPR 2023)

2023-2025: Horizon Europe CSA project on the new European Bauhaus "Bauhaus of the Seas Sails (BoSS)", IIT is a partner.

2023-2025: Horizon Europe CSA Twinning project "Fostering Digital Civics Research and Innovation in Lisbon (Dcitizens)", IIT is a partner.

2021-2025: H2020 FET European Project "Reconstructing the Past: Artificial Intelligence and Robotics Meet Cultural Heritage"(RePAIR), IIT is a partner.

2019 - 2022: H2020 RIA European Project "MEMories and EXperiences for inclusive digital storytelling" (MEMEX), Coordinator.

2019 - Best student paper award at the 20th International Conference on IMAGE ANALYSIS AND PROCESSING (ICIAP 2019)

2018 - Best paper award at the IEEE international Image Processing Applications and Systems conference (IPAS 2018)

2015 - Best poster award at ICCVW 1st International Workshop on Recovering 6D Object Pose.

2015 - Best reviewer award at IEEE CVPR conference

2015 - 2018: Marie Sklodowska-Curie actions – Innovative Training Networks (ITN), SCENEUNDERLIGHT: Time-lapse understanding of the static and human scene and its lighting.

2014 - Best reviewer award at IEEE CVPR conference

2009 - 2012: FCT grant PTDC/EEA-CRO/098822/2008, "PrintArt – Content and Ontology based art image annotation and retrieval".

2009 - one month Invited Professorship at University Blaise-Pascal, LASMEA laboratories, Clermont-

Ferrand, France.

2006 - 2009: FCT grant PTDC/EEA-ACR/72201/2006, "MODI – 3D Models from 2D Images".

2005 - Royal Academy of Engineering international travel grant.

2004 - Royal Academy of Engineering international travel grant.

2004 - Conference publication selected among the best papers - ACCV

2004 - Workshop publication selected among the best papers - CVPRW

2003 - 2006: Queen Mary College Ph.D. Scholarship.

2002 - Master Thesis awarded with "Dignita di Stampa" by the Engineering Council of University of Genova.

2001 - Travel grant awarded for an exchange internship program with Siemens Corporate Research (Princeton, USA).

ORGANISED LOCAL AND INTERNATIONAL EVENTS

2024 October – Workshop Chair of the European Conference on Computer Vision, Milan, Italy (ECCV 2024).

2022 August – Co-organiser of the "Sixth International Workshop on Computer VISion for ART Analysis", in conjunction with the European Conference On Computer Vision (ECCV 2022), Tel Aviv, Israel.

2022 May – Tutorial chair of the "Eight International conference on Image Analysis ans Processing (ICIAP 2021)", Lecce, Italy.

2020 August – Co-organiser of the "Fifth International Workshop on Computer VISion for ART Analysis", in conjunction with the European Conference On Computer Vision (ECCV 2020), Glasgow, UK.

2020 September – Co-organiser of the "2nd Workshop on Applications of Egocentric Vision (EgoApp)", in conjunction with ICPR 2020, Milan, Italy.

2018 September – Tutorial Chair of the "International Conference on 3D Vision (3DV 2018)", Verona, Italy.

2018 September – Co-organiser of the "Fourth International Workshop on Computer VISion for ART Analysis", in conjunction with the European Conference On Computer Vision (ECCV 2018), Munich, Germany.

2017 June – Co-organiser of the "Non-Rigid Structure from Motion Challenge 2017", in conjunction with the IEEE Computer Vision and Pattern Recognition (CVPR) conference, Honolulu, Hawaii.

2016 October – Co-organiser of the "Third International Workshop on Computer VISion for ART Analysis", in conjunction with the European Conference On Computer Vision (ECCV 2016), Amsterdam, Netherlands.

2016 March - "Tutorial on 3D Room Reconstruction from Sound", ICASSP 2016, Shangai, China.

2015 September – Tutorial chair of the "Eight International conference on Image Analysis ans Processing (ICIAP 2015)", Genova, Italy.

2014 September – Co-organiser of the "Second International Workshop on Computer VISion for ART Analysis", in conjunction with the European Conference On Computer Vision (ECCV 2014), Zurich, Switzerland.

2012 October – Co-organiser of the "First International Workshop on Computer VISion for ART Analysis", in conjunction with the European Conference On Computer Vision (ECCV 2012), Firenze, Italy.

2012 October – Co-organiser of the "3rd PAVIS School on Computer Vision, Pattern Recognition,

and Image Processing", Sestri Levante, Italy.

2011 November – Organiser of the tutorial on "non-rigid registration and reconstruction" at the International Conference of Computer Vision (ICCV 2011), Barcelona, Spain.

2011 June – Co-organiser of the "Fourth Workshop on Non-Rigid Shape Analysis and Deformable Image Alignment (NORDIA'11)" at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2011), Colorado Springs, USA.

2011 May – Co-organiser of the "tutorial on Computer Vision in a Non-rigid World" at Scandinavian Conference on Image Analysis (SCIA 2011), Ystad Saltsjobad, Sweden.

2011 March – Co-organiser of the "2nd PLUS Advanced School on Computer Vision, Pattern Recognition, and Image Processing", IIT, Italy.

2010 December – Organiser of the "2nd tutorial on Computer Vision in a Non-rigid World", IIT, Genova, Italy.

2010 July – Co-organiser of the "10 PLUS-VIPS Advanced School on Computer Vision, Pattern Recognition, and Image Processing", Sestri Levante, Italy.

2010 May – Website Chair of the "Fifth International Symposium on 3D Data Processing, Visualization and Transmission (3DPVT 2010)", Paris, France.

PATENTS

2022 - T. Tsemelis, N. Carissimi, A. Del Bue, "Apparatus and method for estimating the illumination of an ambient", WO2023089441A1.

2021 - M Cristani, A Del Bue, M Eschey, F Galasso, I Hasan, T. Tsemelis, "Method of view frustum detection and a corresponding system and product", US Patent 11,175,733.

2021 - M Cristani, A Del Bue, M Eschey, F Galasso, I Hasan, T. Tsemelis, "Method of identifying light sources and a corresponding system and product", US Patent 10,893,594.

2017 - Del Bue A., Galasso F., Tsemelis T., Cristani M., Hasan I., "A method of view frustum detection, corresponding system and computer program product", PCT/IB2017/056244.

2017 - Del Bue A., Galasso F., Tsemelis T., Cristani M., Hasan I., "A method of identifying light sources, corresponding system and computer program product", PCT/IB2017/056246.

2016 - Method for self-calibration of a set of sensors, in particular microphones, and corresponding system, Application number US14122418 (granted).

2012 – Method for self-calibration of a set of sensors, in particular microphones and corresponding system.

2011 – M. Crocco, A. Del Bue and V. Murino, Procedimento di auto-calibrazione di un insieme di sensori, in particolare microfoni, e relativo sistema.

2007 – D. Comaniciu, A. Del Bue and V. Ramesh, Real-time video object generation for smart cameras. Application/Serial Number: 10/325,413.

PUBLICATIONS

Google Scholar: `https://scholar.google.com/citations?user=LUzvbGIAAAAJ`

DBLP address: `http://dblp.uni-trier.de/pers/hd/b/Bue:Alessio_Del`

ORCID ID: `http://orcid.org/0000-0002-2262-4872`

10 TOP PAPERS

- Cavazza, J., Murino, V. and Del Bue, A. (2023). No Adversaries to Zero-Shot Learning: Distilling an Ensemble of Gaussian Feature Generators. IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI).
- Giuliari, F., Skenderi, G., Cristani, M., Wang, Y. and Del Bue, A. (2022). Spatial commonsense graph for object localisation in partial scenes. CVPR 2022.

- Jensen, S. H. N., Doest, M. E. B., Aanæs, H., Del Bue, A. (2021). A benchmark and evaluation of non-rigid structure from motion. International Journal of Computer Vision (IJCV), 129(4), 882-899.
- Cristani, M., Del Bue, A., Murino, V., Setti, F., Vinciarelli, A. (2020). The visual social distancing problem. IEEE Access, 8, 126876-126886.
- Magerand, L., Del Bue, A. (2018) Revisiting projective structure for motion: A robust and efficient incremental solution. IEEE transactions on pattern analysis and machine intelligence.
- Magerand, L., Del Bue, A. (2017). Practical projective structure from motion (p2sfm). In Proceedings of the IEEE International Conference on Computer Vision (ICCV 2017).
- Rubino, C., Crocco, M., Del Bue, A. (2017). 3d object localisation from multi-view image detections. IEEE transactions on pattern analysis and machine intelligence (TPAMI).
- Zhang, B., Perina, A., Murino, V., Del Bue, A. (2015). Sparse representation classification with manifold constraints transfer. In Proceedings of the IEEE conference on computer vision and pattern recognition.
- Paladini, M., Del Bue, A., Xavier, J., Agapito, L., Stosic, M., Dodig, M. (2012). Optimal metric projections for deformable and articulated structure-from-motion. International journal of computer vision.
- Zanacchi, F. C., Lavagnino, Z., Del Bue, A., Furia, L., Faretta, M., Diaspro, A. (2011). Live-cell 3D super-resolution imaging in thick biological samples. Nature methods.

Journal Editing and Reviewing	2023 (ongoing) - Associate Editor of IEEE Transaction of Image Processing
	2019 (ongoing) - Associate Editor of Springer Computer Vision and Image Understanding
	2018 (ongoing) - Associate Editor of Springer Pattern Recognition Journal

Reviewer for the following Journals:
- IEEE PAMI – Transactions on Pattern Analysis and Machine Intelligence.
- Springer IJCV – International Journal of Computer Vision.
- ACM ToC, Transactions on Graphics.
- IEEE TIP – Transactions on Image Processing.
- Springer JMIV – Journal of Mathematical Imaging and Vision.
- IEEE TRO – Transactions on Robotics.
- IEEE Journal of Oceanic Engineering
- Springer IVC – Image Vision and Computing.
- IEEE SMCB-B – Transactions on Systems, Man and Cybernetics - Part B.
- Springer PRL – Pattern Recognition Letters.
- Springer SR – International Journal on Social Robotics.
- MDPI Sensors.
- IEEE JoE, Journal of Oceanic Engineering,

Area Chair for the following Conferences:
- CVPR – Computer Vision and Pattern Recognition Conference.
- ICCV – International Computer Vision Conference.
- ECCV – European Computer Vision Conference.
- BMVC – British Machine Vision Conference.