Niculae Sebe

University of Trento
Department of Information Engineering and Computer Science (DISI)
Italy
http://www.disi.unitn.it/~sebe

Languages: English (very good), Romanian (native speaker), Italian (good)

Research Interests

Computer Vision, Multimedia Analysis, Human-computer Interaction, Human-centered Computing, Affective Computing, Social Signal processing, Multimedia Information Retrieval, Brain-computer Interfaces.

Education

Ph.D., Computer Science, Leiden University, The Netherlands 28 March 2001
Thesis: Improving Visual Matching - Similarity Noise Distribution and Optimal Metrics
Advisor: Prof. Dr. Frans J. Peters, Philips Research, The Netherlands
Co-advisor: Prof. Dr. Thomas S. Huang, Univ. of Illinois at Urbana-Champaign, USA

M.Sc., Electrical Engineering, "Politehnica" University of Bucharest, Romania June 1996
Thesis: Image Compression Using Vector Quantization with a Kohonen Neural Network
Supervisor: Prof. Dr. Victor Neagoe

Research experience

University of Trento, Italy
Full Professor, DISI 01/07/2015- present
Associate Professor, DISI/Faculty of Cognitive Sciences 01/12/2008- 30/06/2015
University of Amsterdam, The Netherlands
Faculty of Science, ISLA Group 01/05/2003- 30/11/2008

My research addresses the problem of **sensing and understanding users' interactive actions and intentions** for achieving multimodal human-computer interaction in natural settings. A critical issue here is that human face and body exhibit complex and rich dynamic behavior that is all non-linear, time varying, and context dependent (person, task, mood/affect dependent). Thus, the main focus of my research is on **multimodal human-computer interaction models from multi-sensory observations.** The research done so far addressed the area of analyzing the user's behavior (e.g., facial expressions, body and head pose, eye tracking, etc.) in his personal environment (e.g., home or office) as well as multimodal emotion recognition from facial expressions, audio, and physiological and brain signals. Another important aspect is the analysis of **multimedia information retrieval** techniques toward extracting **affective information** from multimedia data (e.g., movies).

University of Illinois at Urbana-Champaign, USA
Visiting Professor, Beckman Institute 5/2003 - 9/2003

My research addressed the problem of **semi-supervised learning** of probabilistic classifiers in **Human-computer Interaction applications**. We provided a new analysis that shows under what conditions **unlabeled data** can be used in learning to improve classification performance. We also showed that, if the conditions are violated, using unlabeled data can be detrimental to

classification performance. We discussed the implications of this analysis to a specific type of probabilistic classifiers, **Bayesian networks**, and proposed a new **structure learning algorithm** that can utilize unlabeled data to improve classification. Finally, we showed how the resulting algorithms are successfully employed in three applications related to human-computer interaction and pattern recognition: **facial expression recognition, face detection, and skin detection**. This research was conducted together with **Prof. Thomas Huang,** and his students.

Leiden University, The Netherlands
Assistant Professor, LIACS Media Lab 01/04/2001 – 30/04/2003

My research addressed the problem of **context-based object-class recognition and retrieval**. We developed a new framework for characterizing and retrieving objects in cluttered scenes. This CBIR system was based on a new representation describing every object taking into account the local properties of its parts and their mutual spatial relations, without relying on accurate segmentation. We considered two stages. The first one was to allow an efficient retrieval based on the geometric properties (shape) of objects in images with clutter. This was achieved by using a **contextual descriptor** that incorporates the distribution of local structures, and by taking a proper distance that disregards the clutter of the images. At a second stage, we introduced a more discriminative descriptor that characterized the parts of the objects by their color and their local structure. By using **relevant-feedback and boosting** as a **feature selection algorithm**, our system was able to learn simultaneously the information that characterizes each part of the object along with their mutual spatial relations.

Leiden University, The Netherlands
Ph.D. Research, LIACS Media Lab 01/04/1997 – 31/03/2001

My research addressed the problem of **similarity metrics in computer vision in a maximum likelihood framework**. Many visual matching algorithms can be described in terms of the features and the inter-feature distance or metric. The most commonly used metric is the sum of squared differences SSD (Euclidean distance) which is valid from a maximum likelihood perspective when the real noise distribution is Gaussian. However, we have found experimentally that the Gaussian noise distribution assumption is often invalid and this implies that other metrics, which have distributions closer to the real noise distribution, should be used instead. This research considered three visual matching applications: content-based retrieval, stereo matching and motion tracking and introduced a novel framework to detect the optimal similarity metric in the presence if ground truth. Besides providing an analysis of some of the most commonly used metrics SSD, SAD, Cauchy, etc, in the case where sufficient training data was available we discussed and experimentally tested a new metric based directly on the real noise distribution, which we denoted the maximum likelihood metric.

Teaching Experience

University of Trento 2009 - present

Computational Vision. Master level course covering the basic concepts in computer vision. The course discusses several topics on low-level image analysis methods, including image formation, edge detection, color analysis, feature detection, and image segmentation. Further, it addresses advanced topics including methods for reconstructing three-dimensional scene information using techniques such as depth from stereo, structure from motion, and shape from shading. Finally, the course presents the techniques for motion and object recognition approaches.

Computational Methods for Data Analysis. Machine learning is the essential key in solving complex problems in several research areas such as HCI, pattern recognition, natural language processing, computer vision, etc. The goal of this master level course is to provide the basic elements in machine learning that allow the students to understand further problems in the abovementioned areas. The course covers several important topics including clustering, classification, Support Vector Machines, Bayesian Networks, etc.

Multimedia Systems and Human Computer Interaction. This is a master level course addressing the current trends in multimedia computing. The course takes a holistic approach toward developing human-centered vision systems. The aim is to identify the important research

issues, and to ascertain potentially fruitful future research directions in relation to the multimodal information and to human-computer interaction. In particular, the course introduces key concepts, discuss technical approaches, and open issues in three areas: (1) multimedia data: conceptual analysis at different levels (feature, cognitive, and affective), (2) media databases, indexing, and retrieval: context modeling, cultural issues, and machine learning for user-centric approaches; and (3) multimodal interaction: visual (body, gaze, gesture) and audio (emotion) analysis;

Teorie e tecniche di riconoscimento (Pattern Recognition). This is a bachelor level course meant to provide introductory knowledge of both theoretical and practical aspects of machine learning. The goal is to prepare the students with the basic knowledge and to show applications of machine learning techniques to real world problems.

University of Amsterdam, Faculty of Science 2003 - 2008

Multimedia Information Systems. Master level course which focuses on the current issues in Multimedia Content Analysis. It covers the main problems and challenges in video analysis, including shot-break detection, video summarization and browsing, higher-level semantic and affective analysis, human-computer interaction issues, the use of computer graphics techniques in video production, and several learning strategies. The course has been designed, developed, and lectured by me. Voted by the students as **the most interesting course** in 2007.

Multimedia Information Systems Project. Master level practical course in which the students are asked to prepare a research proposal on emerging technologies in multimedia (free choice). The goal is to give the students the ability to write scientific proposals and the skills to review the proposals written by others. Every student is preparing a final project proposal which is presented in front of the whole class and each research proposal is reviewed by me and the other students.

Leiden University, Computer Science Department 2001 - 2003

Multimedia Systems. This was a third year undergraduate course which focused on the following topics in multimedia systems: speech recognition, robotics, human computer interaction, image analysis, digital video, virtual worlds, and the WWW. Voted by the students as **the most interesting course** in 2002 and 2003.

Computer Graphics. This was a third year undergraduate course. The goal of this course was to create a foundation for understanding the current and future technology underlying computer graphics. The intention was to create a synergistic mixture of theory and practice. Specific subjects that were covered were: 3D Modeling, 3D Lighting & Effects, Real Time Rendering, Ray tracing, Advanced techniques & Texture Mapping

Information Theory. This was a second year undergraduate course. This course focused on the theoretical conditions required for optimal transmission and storage of data. On the basis of simple concepts from probability calculus, models are developed for the information source and the communication channel in general. Further, the theoretical basics for developing source coding algorithms are provided and some of the existing, widely-used algorithms are explained in detail. Also, the protection of information against errors in the communication channel is treated, as well as the problem of information transmission through networks.

Technical University of Valencia 2012-2015
University of Lugano 1/2008
University of Modena 6/2007
Vienna Institute of Technology 12/2005

Human-centered Multimedia Systems. Graduate (doctoral) level intensive course on technical analysis and interaction techniques formulated from the perspective of key human factors in a user-centered approach. The course introduces the key concepts, discuss technical approaches and open issues in three areas: (1) multimedia data: conceptual analysis at different levels

(feature, cognitive, and affective); (2) indexing algorithms: context modeling, cultural issues, and machine learning for user-centric approaches; (3) multimodal interaction: visual (body, gaze, gesture) and audio (emotion) analysis.

Tutorials 2004 - present

20+ tutorials or short courses presented at the leading conferences in Computer Vision (CVPR, ICCV, ACCV), Multimedia (ACM Multimedia, ICME), Pattern Recognition (ICPR), Image Processing (ICIP), etc. and several summer schools.

Doctoral Thesis (Co)Supervisor

1. Roberto Valenti, graduated 2011 (with Theo Gevers)
2. Ivo Everts, graduated 2011 (with Theo Gevers)
3. Zhigang Ma, graduated 2013
4. Jacopo Staiano, graduated 2014
5. Yan Yan, graduated 2014
6. Paolo Rota, graduated 2015 (with Nicola Conci)
7. Gloria Zen, graduated 2015
8. Andreza Sartori, graduated 2015
9. Julia Wache, graduated 2016
10. Pouya Ghaemmaghami, graduated 2017
11. Negar Rostamzadeh, graduated 2017
12. Mojtaba Khomami Abadi, graduated 2017
13. Sergey Tulyakov, graduated 2017
14. Gaowen Liu, graduated 2017
15. Ionut Duta graduated 2017
16. Wei Wang, graduated 2018
17. Dan Xu, graduated 2018 (with Elisa Ricci)
18. Mihai Puscas, graduated 2019
19. Marco De Nadai, graduated 2019 (with Bruno Lepri)
20. Andrea Pilzer, graduated 2020
21. Thittaporn Ganokratanaa, graduated 2020 (with Supavadee Aramvith)
22. Hao Tang, graduated 2021
23. Aliaksander Siarohin, graduated 2021
24. Cveta Majtanovic, graduated 2021
25. Yahui Liu, graduated 2022 (with Bruno Lepri)
26. Subhankar Roy, graduated 2022 (with Elisa Ricci)
27. Alexander Ermolov, graduated 2022
28. Jichao Zhang, graduated 2024
29. Cristiano Saltori, graduated 2024 (with Elisa Ricci)
30. Yue Song, graduated 2024
31. Victor Turrisi da Costa, graduated 2024
32. Weijie Wang, expected 2025 (with Bruno Lepri)
33. Elia Peruzzo, expected 2025
34. Zipeng Xu, expected 2025
35. Bin Ren, expected 2025
36. Songlong Xing, expected 2026
37. Moreno D'Inca, expected 2026
38. Chang Liu, expected 2026
39. Federico Betti, expected 2026
40. Ziheng Chen, expected 2027
41. Andrea Rigo, expected 2027
42. Jiaqi Liu, expected 2027
43. Jinlong Li, expected 2027
44. Chenyu Zhang, expected 2027
45. Haiyamg Zhang, expected 2028
46. Davide Lobba, expected 2028
47. Jiangxing Sun, expected 2028

Postdoctoral researchers

1. Teng Long
2. Ke Han
3. Han-wei Kung
4. Nan Pu
5. Feng Xue
6. Xavier Alameda-Pineda (Research Director at Inria, Grenoble)
7. Ligia Batranca (Research Engineer, Bucharest)
8. Cigdem Beyan (Associate Professor, University of Verona)
9. Dubravko Culbrk (Full professor, University of Novi Sad)
10. Evgeny Krivosheev (AI Engineer, Jumio Corporation)
11. Stéphane Lathuilière (Assistant Professor, Telecom Paris)
12. Moin Nabi (Senior Researcher, Apple, Zurich)
13. Enver Sangineto (Assistant Professor, University of f Modena and Reggio Emilia)
14. Jingkuan Song (Full professor, University of Electronic Science and Technology of China)
15. Ramanathan Subramanian (Associate Professor, Univ. of Canberra)
16. Jasper Uijlings (Research Scientist at Google, Zurich)
17. Radu-Laurentiu Vieriu (Research Scientist, Siemens, Graz)
18. Victoria Yanulevskaya
19. Zhun Zhong (Lecturer, Univ. of Nottingham)

Professional activities

- Department Head, Department of Information Engineering and Computer Science, University of Trento, 2015-2019

- Coordinator, Doctoral School on Information and Communication Technology, University of Trento, 2012 - 2015
- Coordinator, Master Program on Cognitive Sciences (in charge of the Multimodal Interaction track), Faculty of Cognitive Sciences, University of Trento, 2009-2012
- Coordinator, Master Program in Artificial Intelligence (in charge of the Intelligent Systems track), University of Amsterdam, 2005-2009.

- Fellow International Association for Pattern Recognition (IAPR) – 2012.
- Senior Member IEEE – 2011
- Senior Member ACM – 2009
- President Italian Association for Computer Vision, Pattern Recognition and Machine Learning (2022 – present)
- Vice-chair, ACM SIGMM (elected officer 2016-2021).
- Director of Conferences, ACM SIGMM (elected officer 2013-2016).
- Co-chair of the IEEE Computer Society task force on Human-centered Computing (with Alejandro Jaimes, Nahum Gershon, Daniel Gatica-Perez)
- Member of the IEEE Signal Processing Society Multimedia Signal Processing Technical Committee (MMSP TC)

Editorial and coordination activities

- Computer Vision and Image Understanding – Editor in Chief (since January 2023); Associate Editor-in-Chief (March 2021 – December 2022); Associate Editor (June 2012 – February 2021)
- ACM Transactions on Intelligent Systems and Technology – Senior Associate Editor (since January 2022) Associate Editor (since June 2015)
- IEEE Transactions on Pattern Analysis and Machine Intelligence – Associate Editor (since April 2023)
- IEEE Transactions on Affective Computing – Associate Editor (since January 2022)
- ACM Transactions on Multimedia Computing, Communications, and Applications – Advisory Board (since July 2017)

- International Journal of Human Computer Studies – Associate Editor (November 2013 – December 2018)
- IEEE Transactions on Multimedia – Associate Editor (April 2009 – April 2017)
- Machine Vision and Applications - Associate Editor (since July 2007)
- Image and Vision Computing – Associate Editor (since September 2006)
- Journal of Electronic Imaging – Associate Editor (October 2008 – April 2012)
- Journal of Ambient Intelligence and Smart Environments – Advisory Board

- Guest Editor for IEEE Transactions on Multimedia, Special Issue on Large Multi-modal Models for Dynamic Visual Scene Understanding (together with W. Wang, X. Lu, M. Qi, Z. Yang, Y. Yang, J. Luo), Spring 2025.
- Guest Editor for IEEE Transactions on Games, Special Issue on Computer Vision and Games (together with C.Trivedi, M. Guzdial, K. Makantasis, J. Togelius), Fall 2024.
- Guest Editor for International Journal of Computer Vision, Special Issue on Open-World Visual Recognition (together with Z. Zhong, H. Liu, Y. Cui, S. Satoh, M-H. Yang), Spring 2024.
- Guest Editor for IEEE Transactions on Multimedia, Special Issue on Pre-trained Models for Multi-modality Understanding (together with W. Zhou, J. Deng, Q. Tian, A. Yuille, C. Spampinato, Z. Hamal), Spring 2024.
- Guest Editor for Pattern Recognition, Special Issue on Practical Deep Learning in the Wild (together with X. Liu, W. Ouyang, D. Song, A. Liu, R. Gong), Spring 2024
- Guest Editor for IEEE Transactions on Circuits and Systems for Video Technology, Special Issue on Video Transformers (together with L. Nie, J. Wu, and K. Aizawa,), vol. 33, issue 9, September 2023.
- Guest Editor for ACM Transactions on Multimedia, Special Issue on Trustworthy Multimedia Computing and Applications in Urban Scenes (together with W. Liu, H. Shi, Y. Wei, D. Zeng, J. Luo, vol. 19, issue 6, July 2023.
- Guest Editor for IEEE Transactions on Circuits and Systems for Video Technology, Special Issue on Advanced Machine Learning Methodologies for Large-Scale Video Object Segmentation and Detection (together with D. Zhang, H. Rezatofighi, J. Han), vol. 32, issue 12, December 2022.
- Guest Editor for IEEE Transactions on Neural Networks and Learning Systems, Special Issue on Deep Learning for Anomaly Detection (together with G. Pang, C. Aggarwal, C. Shen), vol. 33, issue 6, June 2022.
- Guest Editor for IEEE Transactions on Pattern Analysis and Machine Intelligence, Special Issue on Fine-Grained Visual Categorization (together with J. Wang, Z. Tu, J. Fu, S. Belongie), vol 44, issue 2, February 2022.
- Guest Editor for ACM Transactions on Multimedia, Special Issue on Fine-Grained Visual Recognition and re-Identification (together with S. Zhang, G. Li, W. Zhang, Q. Huang, T. Huang, M. Shah), vol 18, issue 15, January 2022.
- Guest Editor for Pattern Recognition, Special Issue on Explainable Deep Learning for Efficient and Robust Pattern Recognition (together with X. Bai, B. Kim, Q. Liu, X. Liu, J. Song), vol 120, December 2021.
- Guest Editor for ACM Transactions on Multimedia, Special Issue on Explainable AI for Multimedia Computing (together with W.-H. Cheng, J. Liu, J. Yuan, H.-H. Shuai), vol 17, issue 35, October 2021.
- Guest Editor for International Journal of Computer Vision, Special Issue on Generating Realistic Visual Data of Human Behavior (together with X. Alameda-Pineda, A. Salah, E. Ricci, S. Yan), vol 128, issue 5, May 2020.
- Guest Editor for IEEE Transactions on Pattern Analysis and Machine Intelligence, Special Issue on Best of ICCV 2017 (together with R. Cucchiara, Y. Matsushita, and S. Soatto), vol 42, issue 2, February 2020.
- Guest Editor for ACM Transactions on Multimedia, Special Section on Multimodal Understanding of Social, Affective and Subjective Attributes (together with X. Alameda-Pineda, M. Redi, M. Soleymani, S.-F. Chang, and S. Gosling), vol. 15, issue 1, February 2019.

- Guest Editor for International Journal of Computer Vision, Special Issue on Novel Representations and Learning Methods in Computer Vision (together with J. Matas, and B. Liebe), vol. 126, issue 10, October 2018.
- Guest Editor for the IEEE Transactions on Pattern Analysis and Machine Intelligence, Special Issue on Learning with Shared Information for Computer Vision and Multimedia Analysis (together with T. Darell, C. Lampert, Y. Wu, and Y. Yan), vol. 40, issue 5, May 2018.
- Guest Editor for the IEEE Multimedia, Special Issue on New Signals in Multimedia Systems and Applications: Sensing and Understanding Human Behavior and Interactions (together with P. Cesar, V. Singh, R. Jain, and N. Oliver), vol. 25, issue 1, January-March, 2018
- Guest Editor for IEEE Transactions on Multimedia, Special Issue on Large-Scale Multimedia Data Retrieval, Classification, and Understanding (together with J. Song, H. Jegou, C. Snoek, and Q. Tian), vol. 19, issue 9, September 2017.
- Guest Editor for the Image and Vision Computing Journal, Special Issue on Event-based Media Processing and Analysis (together with B. Ionescu, G. Boato, Z. Ma, Y. Kompatsiaris, and S. Yan), vol. 53, September 2016.
- Guest Editor for the Journal of Multimodal User Interfaces, Special Issue on Emotion Recognition in the Wild (together with A. Dhall, R. Goecke, and T. Gedeon), vol. 10, issue 2, June 2016.
- Guest Editor for the IEEE Transactions on Big Data, Special Issue on Big Media Data: Understanding, Search, and Mining (together with J. Wang, G.-J. Qi, and C. Aggarwal), vol. 1, issue 3 & issue 4, July-September & October-December, 2015.
- Guest Editor for Machine Vision and Applications, Special Issue on Contextual Visual Computing (together with R. Hong and Q. Tian), vol. 25, issue 7, October 2014.
- Guest Editor for IEEE Multimedia, Special Issue on Large Scale Geo-Social Multimedia Computing (with R. Ji, Y. Yang, K. Aizawa, L. Cao), vol. 21, issue 3, July-September 2014.
- Guest Editor for IEEE Transactions on Multimedia, Special Issue on Socio-Mobile Media Analysis and Retrieval (together with A. Del Bimbo, K. Selcuk Candan, Y-G. Jiang, J. Luo, T. Mei, H. T. Shen, C. Snoek, and R. Yan), vol. 16, issue 3, April 2014.
- Guest Editor for Computer Vision and Image Understanding, Special Issue on Learning from Multiple Evidences for Large Scale Multimedia Analysis (together with Y. Yang, C. Snoek, X-S. Hua, and Y. Zhuang), vol. 118, issue 1, January 2014.
- Guest Editor for International Journal of Computer Vision, Special Issue on Human-Computer Interaction: Real-Time Vision Aspects of Natural User Interfaces (together with Z. Zivkovic, H. Aghajan, and B. Kisacanin), vol. 101, issue 3, February 2013.
- Guest Editor for the Journal of Visual Communication and Image Representation, Special Issue on Large-Scale Multimedia Search (together with K. Aizawa, T. Mei, M. Wang, and J. Li), vol. 21, issue 8, November 2010.
- Guest Editor for the IEEE Transactions on Multimedia, Special issue on Multimodal Affective Interaction (together with H. Aghajan, T. Huang, N. Magnenat-Thalmann, C. Shan), vol. 12, issue 6, October 2010.
- Guest Editor for the Image and Vision Computing Journal, Special Issue on Face and Gesture Recognition (together with Maja Pantic), vol. 28, nr. 5, May 2010.
- Guest Editor for the ACM Transactions on Multimedia Computing, Communications, and Applications, Special Issue on Multimedia Analysis (together with A. Hanjalic and B. Bailey), vol. 5, nr. 1, October 2008.
- Guest Editor for Computer Vision and Image Understanding, Special Issue on Similarity Matching in Computer Vision and Multimedia (together with Q. Tian, M. Lew, and T. Huang), vol. 110, nr. 3, June 2008.
- Guest Editor for the Image and Vision Computing Journal, Special Issue on Human-computer Interaction in Computer Vision (together with M. Lew and T. Huang), vol. 25, issue 12, December 2007.
- Guest Editor for the IEEE Computer, Special Issue on Human-centered Computing (together with A. Jaimes, D. Gatica-Perez, and T. Huang), vol. 40, nr. 5, May 2007.
- Guest Editor for the ACM Transactions on Multimedia Computing, Communications, and Applications, Special Issue on Multimedia Information Systems (together with M. Lew and C. Djeraba), vol. 2, nr. 1, February 2006.

- Guest Editor for the ACM Multimedia Systems Journal, Special Issue on Systems and Architectures of Multimedia Information Retrieval (together with M. Lew and C. Djeraba), vol. 10, nr. 6, October 2005.
- Guest Editor for Computer Vision and Image Understanding, Special Issue on Video Retrieval and Summarization (together with M. Lew and A. Smeulders), vol. 92, nr. 2-3, November/December 2003.

Conference organization[1]

- General Chair, Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), Bangalore, December 2024.
- General Chair, International Conference on Multimedia Retrieval (ICMR), Thessaloniki, June 2023 **(B ranking)**.
- General Chair International Conference on Multimodal Interfaces (ICMI), Bengaluru, November 2022 **(B ranking)**
- General Chair, ACM Multimedia, Lisbon, October 2022 **(A* ranking)**.
- Program Chair, International Conference on Pattern Recognition (ICPR), Milan, January 2021 **(B ranking)**.
- General Chair, International Conference on Image Analysis and Processing, Trento, September 2019
- Program Chair, IEEE International Conference on Multimedia Big Data, Xi'an, September 2018.
- Program Chair, International Conference on Computer Vision (ICCV), Venice, October 2017 **(A* ranking)**.
- General Chair, International Conference on Multimedia Retrieval (ICMR), Bucharest, June 2017 **(B ranking)**.
- Program Chair, European Conference on Computer Vision (ECCV), Amsterdam, October 2016 **(A ranking)**.
- General Chair, International Conference on Multimedia Modelling, Miami, January 2016 **(C ranking)**.
- General Chair, ACM Multimedia, Barcelona, October 2013 **(A* ranking)**.
- General Chair, International Conference on Affective Computing and Intelligent Interaction (ACII), Geneva, September 2013 **(C ranking)**.
- Program Chair, International Conference on Multimedia Modelling, Huangshan, January 2013 **(C ranking)**.
- Program Chair International Conference on Multimodal Interfaces (ICMI), Alicante, November 2011 **(B ranking)**
- Program Chair, ACM Multimedia, Scottsdale, December 2011 **(A* ranking)**.
- General Chair of the International Conference on Image and Video Retrieval (CIVR), Beijing, July 2010 **(B ranking)**.
- General Chair 8th IEEE International Conference on Automatic Face and Gesture Recognition, Amsterdam, September 2008 **(C ranking)**.
- Program Chair ACM Multimedia, Augsburg, September 2007 **(A* ranking)**.
- General Chair International Conference on Image and Video Retrieval (CIVR), Amsterdam, July 2007 **(B ranking)**.
- General Chair IS&T/SPIE Conference on Storage and Retrieval Methods and Applications for Multimedia, San Jose, CA, January 2007 **(C ranking)**.
- General Chair IS&T/SPIE Conference on Storage and Retrieval Methods and Applications for Multimedia, San Jose, CA, January 2006 **(C ranking)**.
- Program chair of the 2nd International Conference on Image and Video Retrieval, CIVR'2003, Urbana-Champaign, USA, July 24-25, 2003 **(B ranking)**.

- Area Chair European Conference on Computer Vision (ECCV), Milan (Italy), September 2024 **(A* ranking)**.

[1] Ranking according to the Australian Ranking of Core Conferences: A* - Flagship conference, A – Excellent conference, B – Good Conference, C – Other ranked conferences

- Area Chair International Conference on Computer Vision (ICCV), Paris, France, October 2023 **(A* ranking)**.
- Area Chair European Conference on Computer Vision (ECCV), Tel Aviv (Israel), October 2022 **(A* ranking)**.
- Area Chair for IEEE/CVF International Conference on Computer Vision and Pattern Recognition (CVPR), June 2022 **(A* ranking)**.
- Area Chair for AAAI Conference on Artificial Intelligence (AAAI), February 2022 **(A* ranking)**.
- Area Chair European Conference on Computer Vision (ECCV), Glasgow (UK), September 2020 **(A* ranking)**.
- Area Chair British Machine Vision Conference (BMVC), Manchester (UK), September 2020
- Area Chair IEEE International Conference on Automatic Face & Gesture Recognition, Buenos Aires (Argentina), May 2020.
- Area Chair British Machine Vision Conference (BMVC), Cardiff (UK), September 2019
- Area Chair for IEEE/CVF International Conference on Computer Vision and Pattern Recognition (CVPR), Long Beach (USA), June 2019 **(A* ranking)**.
- Area Chair ACM Multimedia, Seoul (Korea), October 2018 **(A* ranking)**.
- Area Chair European Conference on Computer Vision (ECCV), Munchen (Germany), September 2018 **(A* ranking)**.
- Area Chair IEEE International Conference on Computer Vision and Pattern Recognition (CVPR), Honolulu (USA), July 2017 **(A* ranking)**.
- Area Chair IEEE International Conference on Computer Vision (ICCV), Santiago (Chile), December 2015 **(A* ranking)**.
- Area Chair ACM Multimedia, Brisbane (Australia), October 2015 **(A* ranking)**.
- Area Chair ACM Multimedia, Nara (Japan), October 2012 **(A* ranking)**.
- Area Chair Asian Conference on Computer Vision (ACCV), Queenstown (NZ), November 2010 **(B ranking)**.

- Track Chair International Conference on Pattern Recognition (ICPR), Istanbul, August 2010 **(B ranking)**.
- Area Chair European Conference on Computer Vision (ECCV), Heraklion, September 2010 **(A ranking)**.
- Area Chair Asian Conference on Computer Vision (ACCV), Xian, September 2009 **(B ranking)**.
- Track Chair International World Wide Web conference (WWW), Madrid, April 2009 **(A* ranking)**.
- Area Chair IEEE International Conference on Computer Vision and Pattern Recognition (CVPR), Anchorage, USA, June 2008 **(A* ranking)**.

Workshop organization

- Chair Workshop on Computer Vision for Videogames, in conjunction with the European Conference on Computer Vision, Milan, September 2024.
- Chair 7th International Workshop on Visual Odometry and Computer Vision Applications Based on Location Clues, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, Seattle, June 2024.
- Chair Workshop on Computer Vision with Humans in the Loop, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, Seattle, June 2024.
- Chair Workshop on Computer Vision for Games and Games for Computer Vision (CVG), in conjunction with British Machine Vision Conference, Aberdeen, November 2023.
- Chair 6th International Workshop on Visual Odometry and Computer Vision Applications Based on Location Clues, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, Vancouver, June 2023.
- Chair Workshop on Cross-modal Human-robot Interaction, in conjunction with the European Conference on Computer Vision, Tel Aviv, September 2022.
- Chair Workshop on Neural Architecture Search – 2nd lightweight NAS, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, New Orleans, June 2022.

- Chair Workshop on Visual Odometry and Computer Vision Applications Based on Location Clues - Focus on Robotics Applications, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, New Orleans, June 2022.
- Chair Workshop on Real-World Computer Vision from Inputs with Limited Quality (RLQ), in conjunction with the IEEE International Conference on Computer Vision, Montreal, October 2021.
- Chair Workshop on Human Interaction for Robotic Navigation, in conjunction with the IEEE International Conference on Computer Vision, Montreal, October 2021.
- Chair 1st International Workshop on Human-centric Trustworthy Computer Vision: From Research to Applications, in conjunction with the IEEE International Conference on Computer Vision, Montreal, October 2021.
- Chair Workshop on Neural Architecture Search - 1st lightweight NAS, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, Nashville, June 2021.
- Chair Workshop on Visual Odometry and Computer Vision Applications Based on Location Clues - Focus on Mobile Platform Applications, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, Nashville, June 2021.
- Chair Workshop on Fine-Grained Visual Recognition and re-Identification (FGVRID), in conjunction with the International Conference on Pattern Recognition, Milan, January 2021.
- Chair Workshop on Fairness, Accountability, Transparency and Ethics in Multimedia, in conjunction with ACM International Conference on Multimedia, Seattle, October 2020.
- Chair Workshop and Challenge on Large-scale Human-centric Video Analysis in Complex Events, in conjunction with ACM International Conference on Multimedia, Seattle, October 2020.
- Chair Workshop on Real-world Recognition from Low-quality Images and Videos, in conjunction with the European Conference on Computer Vision, Glasgow, September 2020.
- Chair Joint Workshop on Long Term Visual Localization, Visual Odometry and Geometric and Learning-based SLAM, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, Seattle, June 2020.
- Chair 1st Workshop on Intelligent Short-Video, in conjunction with the IEEE International Conference on Computer Vision, Seoul, October 2019.
- Chair 10th International Workshop on Human Behavior Understanding, in conjunction with the IEEE International Conference on Computer Vision, Seoul, October 2019.
- Chair Workshop on Fairness Accountability and Transparency in Multimedia in conjunction with the ACM International Conference on Multimedia, Nice, October 2019.
- Chair Workshop on Visual Artificial Intelligence and Entrepreneurship in conjunction with the British Machine Vision Conference, Cardiff, September 2019.
- Chair 3nd Workshop on Visual Odometry and Computer Vision Applications Based on Location Clues, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, Long Beach, June 2019.
- Chair Workshop on Understanding Subjective Attributes of Data: Focus on Fashion and Subjective Search, in conjunction with the IEEE/CVF Conference on Computer Vision and Pattern Recognition, Long Beach, June 2019.
- Chair Workshop on Understanding Subjective Attributes of Data: Multimodal Recognition of Evoked Emotions, in conjunction with the ACM International Conference on Multimedia, Seoul, October 2018.
- Chair International Workshop on Human Behavior Understanding: Generating Visual Data of Human Behavior, in conjunction with the European Conference on Computer Vision, Munchen, September 2018.
- Chair Workshop on Understanding Subjective Attributes of Data: Visual Understanding, in conjunction with the IEEE Conference on Computer Vision and Pattern Recognition, Salt Lake City, June 2018.
- Chair 2nd Workshop on Visual Odometry and Computer Vision Applications Based on Location Clues, in conjunction with the IEEE Conference on Computer Vision and Pattern Recognition, Salt Lake City, June 2018.
- Chair ACM Workshop on Multimodal Understanding of Social, Affective and Subjective Attributes (MUSA), in conjunction with the ACM International Conference on Multimedia, Mountain View, October 2017.

- Chair Workshop on Visual Odometry and Computer Vision Applications Based on Location Clues, in conjunction with the IEEE Conference on Computer Vision and Pattern Recognition, Honolulu, July 2017.
- Chair Workshop on Computer Vision for Affective Computing (CV4AC), in conjunction with the Asian Computer Vision Conference, Taipei, November 2016.
- Chair Workshop on 3D Face Alignment in the Wild & Challenge (3DFAW), in conjunction with the European Conference on Computer Vision, October 2016.
- Chair Workshop on Image and Video Processing for Quality of Multimedia Experience (QOEM), in conjunction with the International Conference on Image Analysis and Processing, September 2015.
- Chair Dagstuhl Seminar on Cross-Lingual Cross-Media Content Linking: Annotations and Joint Representations, May 2015.
- Chair Workshop on Computer Vision for Affective Computing (CV4AC), in conjunction with the Asian Computer Vision Conference, Singapore, November 2014.
- Chair ACM Workshop on Multimodal Pervasive Video Analysis (MPVA), in conjunction with the ACM International Conference on Multimedia, Florence, Italy, October 2010.
- Chair International Workshop on Human Behavior Understanding - in conjunction with the International Conference on Pattern Recognition (ICPR), Istanbul, August 2010.
- Chair 5th International Workshop on Human Computer Interaction (HCI09) - in conjunction with the IEEE International Conference on Computer Vision (ICCV 2009), Kyoto, Japan, September 2009.
- General Co-Chair 10th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS), London, May 2009.
- Chair 4th International Workshop on Human Computer Interaction (HCI07) - in conjunction with the IEEE International Conference on Computer Vision (ICCV 2007), Rio de Janeiro, Brazil, October 20, 2007.
- Chair Human-centered Multimedia Workshop (HCM'07) – in conjunction with the ACM Multimedia Conference (ACM MM 2007), Augsburg, Germany, September 2007.
- Program Co-Chair International Workshop on Multimedia Content Analysis and Mining (MCAM), WeiHai, China, June 2007.
- Chair Human-centered Multimedia Workshop (HCM'06) – in conjunction with the ACM Multimedia Conference (ACM MM 2006), Santa Barbara, USA, October 2006.
- Chair 3rd International Workshop on Human Computer Interaction (HCI06) - in conjunction with the European Conference on Computer Vision (ECCV 2006), Graz, Austria, May 13, 2006.
- Chair 2nd IEEE International Workshop on Human Computer Interaction (HCI05) - in conjunction with the International Conference on Computer Vision (ICCV 2005), Beijing, China, October 21, 2005.
- Chair 6th ACM SIGMM International Workshop on Multimedia Information Retrieval (MIR04) - in conjunction with ACM Multimedia 2004, New York, USA, October 2004.
- Chair 1st International Workshop on Human Computer Interaction (HCI04) - in conjunction with the European Conference on Computer Vision (ECCV 2004), Prague, Czech Republic, May 15, 2004.
- Chair 5th ACM SIGMM International Workshop on Multimedia Information Retrieval (MIR03) - in conjunction with ACM Multimedia 2003, Berkeley, USA, November 7, 2003.

Tutorials and Courses

- Tutorial on Multimodal human behavior analysis in the wild: Recent advances and open problems, International Conference on Pattern Recognition, Cancun, December 2016 **(B ranking)**.
- Tutorial on Emerging Topics in Learning from Noisy and Missing Data, ACM Multimedia, Amsterdam, October 2016 **(A* ranking)**.
- Short course on Social Signal Processing, IEEE Summer School of Signal Processing, Garda Lake, September 2015.
- Short course on From Concepts to Events: A Progressive Process for Multimedia Content Analysis, Summer School on Evolving Semantic Systems, Edinburgh, August 2015.

- Short course on Human-centered Computing: Challenges and Perspectives, SSPNet Summer School, Vietri sul Mare, June 2013.
- Short course on Human-centered Computing: Challenges and Perspectives, 11th Summer School on Advanced Studies on Biometrics for Secure Authentication, Alghero, June 2012.
- Tutorial on Human-centered Vision Systems, Asian Conference on Computer Vision, Queenstown, November 2010 **(B ranking)**.
- Tutorial on Human-centered Vision Systems: Context-driven Algorithm Design, IEEE Conference on Computer Vision and Pattern Recognition, San Francisco, June 2010 **(A* ranking)**.
- Tutorial on Human-centered Vision Systems, IEEE International Conference on Computer Vision, Kyoto, September 2009 **(A* ranking)**.
- Tutorial on Human-centered Vision Systems, International Conference on Image Analysis and Processing (ICIAP), Vietri sul Mare, September 2009 **(B ranking)**.
- Tutorial on Human-centered Computer Vision Systems, IEEE International Conference on Computer Vision, Rio de Janeiro, October 2007 **(A* ranking)**.
- Tutorial on Image and Video Retrieval, IEEE International Conference on Computer Vision, Rio de Janeiro, October 2007 **(A* ranking)**.
- Tutorial on Human-centered Multimedia, ACM Multimedia, Augsburg, September 2007 **(A* ranking)**.
- Tutorial on Image and Video Retrieval, International Conference on Image Processing (ICIP), San Antonio, September 2007 **(B ranking)**.
- Tutorial on Image and Video Retrieval, International Conference on Image Analysis and Processing (ICIAP), Modena, September 2007 **(B ranking)**.
- Tutorial on Human-centered Multimedia, IEEE International Conference on Multimedia and Expo (ICME), Beijing, July 2007 **(B ranking)**.
- Tutorial on Image and Video Retrieval, IEEE International Conference on Multimedia and Expo (ICME), Beijing, July 2007 **(B ranking)**.
- Tutorial on Human-Centered Methods, International Conference on Pattern Recognition (ICPR), Hong Kong, August 2006 **(B ranking)**.
- Tutorial on Image and Video Retrieval, International Conference on Pattern Recognition (ICPR), Hong Kong, August 2006 **(B ranking)**.
- Intensive course on Multimedia Information Systems, 13th International Summer School in Novel Computing, Joensuu, Finland, August 2006.
- Tutorial on Human-Centered Vision Systems, IEEE International Conference on Computer Vision and Pattern Recognition (CVPR), New York, June 2006 **(A* ranking)**.
- Intensive course on Feature Extraction and Content Description, joint DELOS-MUSCLE summer school on Multimedia Digital Libraries, San Vincenzo, Italy, June 2006.
- Tutorial on Image and Video Retrieval, IS&T/SPIE Conference on Internet Imaging, San Jose, CA, January 2006.
- Tutorial on Human-Centered Multimedia Information Systems, ACM Multimedia, Singapore, November 2005 **(A* ranking)**.
- Tutorial on Human-Centered Vision Systems, IEEE International Conference on Computer Vision (ICCV), Beijing, October 2005 **(A* ranking)**.
- Tutorial on Human-Centered Multimedia Information Systems, IEEE Conference on Multimedia and Expo (ICME), Amsterdam, The Netherlands, July 2005 **(B ranking)**.
- Tutorial on Image and Video Retrieval, IS&T/SPIE Conference on Internet Imaging, San Jose, CA, January 2005.
- Tutorial on Human-Centered Multimedia Information Systems, 5th Pacific Rim Conference on Multimedia, Tokyo, Japan, December 2004.

Keynote Presentations

- IEEE International Conference on Multimedia and Expo (ICME), July 2022
- International Conference on Pattern Recognition Applications and Methods, February 2022
- Artificial Intelligence Digital Academy Lecture Series, online, April 2021
- 10th Conference on Articulated Motion and Deformable Objects, Palma, Mallorca, July 2018
- 2nd Conference on Recent Advances in Artificial Intelligence, Bucharest, June, 2018
- International Conference on Multimedia Modeling, Bangkok, February 2018

- International Conference on Image Analysis and Processing, Catania, September 2017.
- International Conference on Internet Multimedia Computing and Service (ICIMCS), Xi'an, August 2016.
- "Things and stuff: A Computer Vision Perspective", Ninth Conference on Image Information Mining, Bucharest, March 2014.
- French Image Processing and Pattern Recognition Conference, RFIA, Caen, France, January 2010.
- Audio-Visual Signal processing for Advanced Multimodal Interfaces Workshop, Malaga, Spain, February 2008.
- IEEE International Workshop on Ambient Intelligence, Media, and Sensing (AIMS07), Istanbul, Turkey, April 2007.
- European Commission Workshop on Multimodal Interfaces, Luxembourg, December 2006.
- IS&T/SPIE Conference on Internet Imaging, San Jose, CA, January 2005.

Scholarships and prizes

- Grand Challenge Organizer Award, Human in Events: A Large-Scale Benchmark for Human-centric Video Analysis in Complex Events Grand Challenge, ACM Multimedia 2020.
- Best Paper Award for ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM), for Increasing Image Memorability with Neural Style Transfer, 2020
- Best Paper Award for IEEE Transactions on Affective Computing, for ASCERTAIN: Emotion and Personality Recognition using Commercial Sensors, 2019
- Italian Association on Pattern Recognition (CVPL/GIRPR) award for the best PhD thesis (PhD student Wei Wang), 2018
- Second best student paper award (PhD student Mahdyar Ravan) - *International Conference on Image Processing (ICIP'17)*
- Best paper award, ACM Multimedia 2015
- ACM SIGMM Outstanding PhD Thesis Award 2014 (PhD student Zhigang Ma)

- Italian Association on Pattern Recognition (GIRPR) award for the best PhD thesis (PhD student Zhigang Ma), 2014
- Best PhD Thesis Award in ICT, University of Trento 2014 (PhD student Zhigang Ma)
- Best paper award – *ACM International Joint Conference on Pervasive and Ubiquitous Computing (Ubicomp'14)*
- Best student paper award (PhD student Yan Yan) - *International Conference on Pattern Recognition (ICPR'14)*
- Best honorable mention – *ACM Conference on Designing Interactive Systems (DIS'12),* Newcastle, UK, June 2012
- Best Associate Editor award – *Image and Vision Computing*, 2010
- Best reviewer award – *Asian Conference on Computer Vision (ACCV)*, 2007
- Research fellowship at British Telecomm Labs, UK, 2002.
- Best paper runner up – *British Machine Vision Conference (BMVC)*, Manchester, UK, September 2001.
- Best paper award - *4th International Conference on Advances in Visual Information Systems (Visual'00)*, Lyon, France, November 2000.
- Visiting research grant (6 months) offered by Darmstadt University of Technology (1996-1997).
- Best Student Paper Award – IEEE International Conference on Semiconductors (CAS'96).

Visiting Professorships

- July 2014, University of Central Florida, in the group on Prof. Mubarak Shah
- January/February 2008 visiting professor at University of Lugano, in the group of Prof. Dr. Fabio Crestani.
- May/June 2007 visiting professor at Sabanci University, Istanbul, in the group of Prof. Dr. A. Ercil, supported by a grant of European Commission.
- June/July 2006 visiting professor at University of Modena, in the group of Prof. Dr. Rita Cucchiara.

- December 2005 visiting professor at Vienna University of Technology, in the group of Prof. Dr. W. Kropatsch, supported by a grant of Dutch Science Foundation.
- May/September visiting professor at Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign in the group of Prof. Dr. T.S. Huang, supported by a grant of Philips Research in The Netherlands.
- 1.12.2002 – 1.02.2003 fellow at British Telecom Labs in Ipswich, UK.
- October/December 2001 visiting professor at Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign in the group of Prof. Dr. T. S. Huang, supported by a grant of Philips Research in The Netherlands.
- 1.10.1999 - 31.12.1999 visiting researcher at Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign in the group of Prof. Dr. T. S. Huang, supported by a grant of Philips Research in The Netherlands.
- 1.07.1996 - 1.10.1996 visiting researcher at the Department of Electrical Engineering and Information Technology, TU Darmstadt in the group of Prof. Dr. M. Glesner.
- 1.10.1995 - 31.12.1995 visiting researcher at the Department of Electrical Engineering and Information Technology, TU Darmstadt in the group of Prof. Dr. M. Glesner.

Media Coverage

- MIT Technology Review, March 24, 2016, Data Mining Reveals the Four Urban Conditions That Create Vibrant City Life, https://www.technologyreview.com/s/601107/data-mining-reveals-the-four-urban-conditions-that-create-vibrant-city-life
- Ci – Corriere Innovazione, Occhi Puntati sugli Spettatori, December 7, 2013, http://www.unitn.it/files/download/33086/occhisuglispettatori.pdf
- MIT Technology Review, September 26, 2013, How Images Become Viral on Google+ http://www.technologyreview.com/view/519611/how-images-become-viral-on-google
- La Stampa, Il tuo smartphone ti osserva e studia cosa fai e cosa pensi, April 17, 2013, http://www.lastampa.it/2013/04/17/scienza/tuttoscienze/il-tuo-smartphone-ti-osserva-e-studia-cosa-fai-e-cosa-pensi-vIACZdp8UvL99ZCKt1VmTK/pagina.html
- The New Scientist, Computers identify what makes abstract art move us, November 16, 2012, http://www.newscientist.com/article/mg21628916.000-computers-identify-what-makes-abstract-art-move-us.html
- Wired, Emotion-Recognition Software Knows What Makes You Smile, July 16, 2007, http://www.wired.com/science/discoveries/news/2007/07/expression_research
- CNN, Computer decodes Mona Lisa's smile, December 16, 2006, http://edition.cnn.com/2005/TECH/12/16/mona.lisa.smile/
- The New Scientist, Software decodes Mona Lisa's enigmatic smile, December 15, 2005, http://www.newscientist.com/article/mg18825305.200-software-decodes-mona-lisas-enigmatic-smile.html
- The Guardian, Great Art: A Machine's view, December 21, 2005, http://www.theguardian.com/artanddesign/2005/dec/21/art1
- Time Magazine, Mona Lisa Secrets, Oct. 9, 2006, http://content.time.com/time/magazine/article/0,9171,1541284,00.html
- "Coupez le Son! Le Charisme Politique", DVD, Mona Lisa Production Ina, April 2007, http://www.linternaute.com/video/70011/coupez-le-son-le-charisme-politique/

Citation Summary (as of 05/08/2024)

- H-index (Google scholar): 108
- H-index (Scopus): 81
- Citations (Google scholar): 43472 (3863 – in 2024)
- Citations (Scopus): 24331