TC ANNUAL REPORTING FORM

IMS Technical Committee

TC-22 - Intelligent Measurement Systems

Reporting period

Starting date (dd/mm/yy)	Ending date (dd/mm/yy)	Date of submission (dd/mm/yy)
01/01/24	31/12/24	30/01/25

Website

https://ieee-ims.org/tech05nical-committee/tc-22 **Last update (mm/yy)**

TC Chair or co-Chairs

First Name	Second Name	Family Name	Affiliation /Address	Membership number	Phone	e-mail address	Date of election
Pasquale		Coscia	Università degli Studi di Milano, Italy	94198290	+39 02 503 16650	pasquale.coscia@unimi.it	July 1, 2023
Mel		Siegel	Carnegie Mellon University, USA		+1 412 268 8742	mws@cmu.edu	

Secretary (check the right box) Present ☐ Not Present X

First Name	Second Name	Family Name	Affiliation /Address	Membership number	Phone	e-mail address	Date of election

* Please add as many rows as needed

TC Membership list(*)

First Name	Second Name	Family Name	Affiliation /Address	Membership number	Phone	e-mail address	TC assignments (joining year)
Pasquale		Coscia	Università degli Studi di Milano, Italy	94198290	+39 02 503 16291	pasquale.coscia@unimi.it	
Mario		Diván	National University of La Pampa, Argentina			mjdivan@eco.unlpam.edu.ar	
Angelo		Genovese	Università degli Studi di Milano, Italy	92187688	+39 02 503 16249	angelo.genovese@unimi.it	
Vincenzo		Piuri	Università degli Studi di Milano, Italy		+39 02 503 16244	vincenzo.piuri@unimi.it	
Fabio		Scotti	Università degli Studi di Milano, Italy		+39 02 503 16229	fabio.scotti@unimi.it	
Mel		Siegel	Carnegie Mellon University, USA		+1 412 268 8742	mws@cmu.edu	
Zsolt János		Viharos	Hungarian Academy of Sciences, Hungary		+36 1 279 6 195	viharos.zsolt@sztaki.mta.hu	

TC mission – field of expertise (max. 1000 char. Including spaces)

Scope

Fostering development and use of artificial intelligence, computational intelligence, and soft computing in measurement systems and related applications.

Goals

- Develop, promote, and support artificial intelligence and soft computing in instrumentation and measurement systems.
- Develop, promote, and support the integration of artificial intelligence and soft-computing technologies in advanced instrumentation and measurement procedures and systems.
- Develop, promote, and support standards in the field of artificial intelligence and soft-computing technologies for intelligent instrumentation and measurement applications.
- Disseminate information and knowledge about artificial intelligence and soft-computing technologies for instrumentation and measurement applications and attract a wider audience to their benefits.
- Maintain liaisons with other committees, groups, societies, and organizations working on artificial intelligence and soft-computing technologies and in the applications fields.

* Please add as many rows as needed

TC meetings in the reporting period(*)

Date (dd/mm/yy)	Online / Face2Face	Attendance (number)	Information sent within 4 months to (Yes/No) TC Members	Chair of TSAC	IM Magazine	Other (specify)

Minutes of the yearly meeting (separate file)[1]:

Participation in Society sponsored Events (Conferences, Symposia, Workshops) (*)

Name of the Event	Starting date (event) (dd/mm/yy)	Ending date (event) (dd/mm/yy)	Date Participation (dd/mm/yy)	Type of participation (Yes/No) Sponsorship Session	Tutorial	Other (specify) [2]
IEEE I2MTC Int. Instrumentation and Measurement Technology Conference, Glasgow, Scotland, 2024. P. Coscia, "Artificial Intelligence for Image Synthesis in Smart Manufacturing and Environmental Applications"	May 20, 2024	May 23, 2024	May 20, 2024		YES	
2024 IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA)	14/06/2024	16/06/2024	14-16/06/2024			Submission of papers Reviewing papers (about 5)

Involvement in standard development(*)

Standard	Working Group	Revision	Activity in the reporting period, including dates	Notes, attendance

[1] Yes/No, date of the yearly meeting;

[2] For example, Involvement in reviewing papers (and indicate approximate number of paper reviews for the listed event)

* Please add as many rows as needed

Participation in the development of Society Educational Programs(*)

Program name	Involvement of chapters and sections	Activity in the reporting period, including dates	Notes, attendance

Other Activities (tutorials, teaching, career, cooperation, publications, joint activity with chapters or sections) (*)

Type of activity	Starting date (dd/mm/yy)	Ending date (dd/mm/yy)	Activity in the reporting period	Notes, attendance
Collaboration			Collaboration with STMicroelectronics, Catania, Italy	
Collaboration			Collaboration with Symbiosis International University, Faculty of Engineering, India	
Collaboration			Collaboration with Multimedia Laboratory, University of Toronto, Canada	
Collaboration			Collaboration with Wuyi University, Guangdong, China	
Teaching			Dr. P. Coscia, "Intelligent Monitoring and Control Systems", Università degli Studi di Pavia, Italy, A.Y. 2024/2025 (September-December 2024)	
Teaching			Prof. A. Genovese, M.Sc. Course: "Artificial Intelligence", Università degli Studi di Milano, Italy (A.Y 2024-2025)	
Teaching			Prof. A. Genovese, M.Sc. Course: "Sensing and vision for industry and environment", Università degli Studi di Milano, Italy (A.Y 2024-2025)	
Teaching			Prof. A. Ruggero D. Labati, Prof. V. Piuri, M.Sc. Course: "Advanced foundations of artificial intelligence", Università degli Studi di Milano, Italy (A.Y 2024-2025)	
Teaching			Prof. F. Scotti, M.Sc. Course: "Intelligent systems for industry, supply chain and environment", Università degli Studi di Milano, Italy (A.Y 2024-2025)	
Publication			P. Coscia, A. Genovese, and F. Scotti and V. Piuri, "Features disentanglement for explainable convolutional neural networks", in Proc. of the 2024 IEEE Int. Conf. on Image Processing (ICIP 2024), Abu Dhabi, UAE, October 27-30, 2024	
Publication			Y. Zhai, J. Pan, H. Zhang, T. Xian, Y. Xu, P. Coscia, A. Genovese, V. Piuri, F. Scotti, and C. L. P. Chen, "Efficient adjacent feature harmonizer network with UAV-CD+ dataset for remote sensing change detection", in IEEE Trans. on Geoscience and Remote Sensing, vol. 62, November, 2024	

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Publication	Z. Ying, T. Xian, Y. Zhai, X. Jia, H. Zhang, J. Pan, P. Coscia, A. Genovese, V. Piuri, and F. Scotti, "DS-HyFA-Net: A deeply supervised hybrid feature aggregation network with multi-encoders for change detection in high-resolution imagery", in IEEE Trans. on Geoscience and Remote Sensing, vol. 62, no. 5643317, October, 2024
Publication	C. Dong, C. Wang, Y. Zhai, Y. Li, J. Zhou, P. Coscia, A. Genovese, V. Piuri, and F. Scotti, "GMTNet: Dense object detection via global dynamically matching transformer network", in IEEE Trans. on Circuits and Systems for Video Technology, 2024
Publication	A. Genovese, V. Piuri, and F. Scotti, "A Decision Support System for Acute Lymphoblastic Leukemia Detection based on Explainable Artificial Intelligence", in Image and Vision Computing, vol. 151, no. 105298, November, 2024.
Publication	M. B. Anley, A. Genovese, D. Agostinello, and V. Piuri, "Robust DDoS attack detection with adaptive transfer learning", in Computers & Security, vol. 144, no. 103962, September, 2024
Publication	Z. Jiang, Y. Zhai, F. Ke, J. Zhou, A. Genovese, V. Piuri, and F. Scotti, "Learning to count arbitrary industrial manufacturing workpieces", in IEEE Trans. on Industrial Informatics, vol. 20, no. 5, May, 2024
Publication	Y. Xu, Q. Ke, Z. Jiang, Y. Zhai, A. Genovese, V. Piuri, and F. Scotti, "Antenna parameter measurement network with dual attention and focus loss using UAV", in IEEE Transactions on Artificial Intelligence, vol. 5, no. 4, April, 2024
Publication	C. Dong, C. Wang, Y. Zhai, Y. Li, J. Zhou, P. Coscia, A. Genovese, V. Piuri, and F. Scotti, "GMTNet: Dense object detection via global dynamically matching transformer network", in IEEE Trans. on Circuits and Systems for Video Technology, 2024
Publication	C. Mai, Y. Wu, Y. Zhai, H. Quan, J. Zhou, A. Genovese, V. Piuri, and F. Scotti, "DBCG-Net: Dual branch calibration guided deep network for UAV images semantic segmentation", in IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, vol. 17, 2024
Publication	Z. Ying, Z. Tan, Y. Zhai, X. Jia, W. Li, J. Zeng, A. Genovese, V. Piuri, and F. Scotti, "DGMA2-Net: A difference-guided multiscale aggregation attention network for remote sensing change detection", in IEEE Transactions on Geoscience and Remote Sensing, 2024
Publication	A. J. Aragon Molina, D. De Angelis, R. Donida Labati, F. Scotti, V. Piuri , "Deep Neural Networks for Assessing the Legal Age from Panoramic Dental X-ray Images", in IEEE International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA 2024), June, 2024
Publication	Z. Mizgalewicz, C. R. Cuenca, M. R. Rivolta, R. Donida Labati, F. Scotti and V. Piuri, R. Sassi, "Minimal Preprocessing of ECG Signals for Deep Learning-Based Biometric Systems", in IEEE International Conference on Computational

* Please add as many rows as needed

	Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA 2024), June, 2024
Publication	B. Bajic, A. Rikalovic, N. Suzic, V. Piuri, "Toward a Human-Cyber-Physical System for Real-Time Anomaly Detection", in IEEE Systems Journal, IEEE, pp. 1308-1319, 2024
Publication	N.Kouka, V.Piuri, P.Samarati, "Tasks Scheduling with Load Balancing in Fog Computing: a Bi-level Multi-Objective Optimization Approach", in Genetic and Evolutionary Computation Conference (GECCO '24), July 14-18, 2024
Research project	EU Horizon Europe Framework Programme, EdgeAI – Edge AI Technologies for Optimised Performance Embedded Processing
Research project	EU Horizon 2020 Research and Innovation Programme (H2020), MARSAL – Machine Learning-based Networking and Computing Infrastructure Management for Beyond 5G
Research project	GLACIATION - Green responsibLe privACy preservIng dAta operaTIONs
Invited Speaker	P. Coscia, “Optimized Image Synthesis for Industrial Scenarios”, Confluence 2024, 14th International Conference on Cloud Computing, Data Science & Engineering (technically co-sponsored by Springer), Virtual, January 18-19, 2024
Invited speaker	A. Genovese, "Deep Learning for hematopathology", 2024 Int. Conf. on Automation, Robotics and Computer Engineering (ICARCE 2024), December 18, 2024
Invited speaker	A. Genovese, "Deep Learning for hematopathology", 8th International Conference on Advances in Artificial Intelligence (ICAAI 2024), October 17, 2024
Invited speaker	A. Genovese, "Deep Learning for hematopathology", 2024 Int. Conf. on Information Technology (INCITE 2024), March 6, 2024;
Invited Speaker	R. D. Labati, “Artificial Intelligence for Biometric Recognition Systems,” 4th International conference on Advanced Computing and Intelligent Technologies (ICACIT), Remote, December 13—14, 2024;
Invited Speaker	R. D. Labati, “Artificial Intelligence for Biometric Technologies,” 4th International Conference on Information Technology (InCETe 2024), Uttar Pradesh, India, March 6—7, 2024;
Seminar	R. D. Labati, “Artificial Intelligence for Biometric Recognition,” Xidian University, Xi'an, China, June 12, 2024
Joint Activity	IEEE TC-22 IMS, IEEE CIS Society and IEEE members will organize the next edition of the IEEE CIVEMSA 2025 conference.

* Please add as many rows as needed

Recommended candidates(*)

Type (ADCOM, Fellow, Award –specify-)	First Name	Second Name	Family Name	Affiliation /Address	Motivation

* Please add as many rows as needed

TC operating Plan: near-term plans for the upcoming year, including scheduled meetings, activities, and so on (max. 1000 char. Including spaces)

The TC will organize, together with the IEEE Computational Intelligence Society (CIS) and other IEEE members, the next edition of the International Conference on Computational Intelligence and Virtual Environments for Measurement Systems and Applications (CIVEMSA 2025). As in previous years, the conference will be an interesting venue for researchers and interested scholars to publish works and exchange ideas related, among others, to the key activities of the TC.

Topics in the scope of the CIVEMSA conference include

- Intelligent Measurement Systems
- Multi-Sensor Data Fusion & Intelligent Sensor Fusion
- Intelligent Monitoring & Control Systems
- Neural & Fuzzy Signal/Image Processing for Industrial, Environmental & Domotics Applications
- Machine & Deep Learning for Intelligent Systems
- Computational Intelligence Technologies for Robotics & Vision
- Computational Intelligence Technologies for Medical & Bioengineering Applications
- Hardware Implementation of Neural & Fuzzy Systems for Measurements
- Neural & Fuzzy Techniques for Quality Measurement

TC operating plan: long term vision from 2-5 years out, based on IMS Strategic Plan, including areas of strength , areas for improvement, how is the subject area going to change, planned actions for lifting achievement succession plans etc. (max. 1000 char. Including spaces)

- Organization of internships on intelligent measurement systems
- Theses supervision on intelligent measurement systems
- Organization and promotion of conferences and workshops
- Organization and chairing of special sessions
- Presentation and dissemination of papers and tutorials

TC convergence, synergy, cooperation with other TC, from I&M or other societies (max. 1000 char. Including spaces)

The TC-22 is planning joint activities with other societies and councils that have a similar scope, including organization and sponsorship of conferences and workshops, organization of special sessions, and organization of special issues in journals in the field of intelligent measurement systems.

Societies and councils include:

- IEEE Computational Intelligence Society
- IEEE Systems Council
- IEEE Biometrics Council

* Please add as many rows as needed

Comments/Suggestions (max. 1000 char. Including spaces)

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