

# Industry Workshop AI in Manufacturing

*18 September 2024*  
4:30 pm – 6:30pm (CEST)

## Objective

This session will explore the role of Artificial Intelligence in manufacturing industries of tomorrow. The session will bring together a diverse group of panelists with experience in academic research, technology transfer, and entrepreneurship.

## Program

4:30 pm-4:35 pm

Welcome to participants **Toni Matila** – IEEE R8 Afi Committee Chair

4:35 pm - 4:50 pm

**Tom Coughlin** (IEEE President) *(on line)*

*Making and Maintaining our Connections in Industry*

4:50 pm - 5:05 pm

**Vincenzo Piuri** (University of Milan & IEEE Region 8 Director)

*Artificial Intelligence and Machine Learning for Smart and Sustainable Manufacturing*

5:05 pm - 5:20 pm

**Paolo Gritti** (Innovation and Common Technologies Manager at ABB Smart Power)

*Application of AI to Low Voltage power distribution devices and digital solutions*

5:20 pm - 5:35 pm

**Viviana D'Alto** (STMicroelectronics)

*Distributed Artificial Intelligence for Industrial Applications*

5:35 pm - 5:50 pm

**Serge Dos Santos** (INSA Centre Val de Loire)

*NDE4.0: an optimized merging of Industry 4.0, Nondestructive Testing (NDT) and Artificial Intelligence (AI)*

5:50 pm - 6:30 pm

Q&A & Round Table – *Moderator: Toni Matila*

## APPENDIX – abstracts- and short CVs of the speakers

### Tom Coughlin



*Title: Making and Maintaining our Connections in Industry*

#### **Summary**

To achieve its full potential, IEEE must provide value to individuals who put technology into practice, as well as those who develop new technologies. 2024 IEEE President & CEO Tom Coughlin will discuss how IEEE is striving to lead the way in promoting important technological developments, including standards, technology roadmaps, educational opportunities, publications, and conferences, that help drive the future of industry and increase IEEE's relevance to those involved in the practical applications of technology.

#### **Short Biography**

Tom Coughlin, President, Coughlin Associates is a digital storage analyst and business/ technology consultant. He has over 40 years in the data storage industry with engineering and senior management positions. Coughlin Associates consults, publishes books and market and technology reports and puts on digital storage and memory-oriented events. He is a regular contributor for forbes.com and M&E organization websites. He is an IEEE Fellow, 2024 IEEE President, Past-President IEEE-USA, Past Director IEEE Region 6 and Past Chair Santa Clara Valley IEEE Section and is also active with SNIA and SMPTE. For more information on Tom Coughlin go to [www.tomcoughlin.com](http://www.tomcoughlin.com)

## Vincenzo Piuri



*Title: Artificial Intelligence and Machine Learning for Smart and Sustainable Manufacturing*

### Summary

Artificial intelligence and machine learning offer opportunities for adaptable and evolvable control of manufacturing processes, by learning the desired behavior from real data and dynamically adjusting the operation. This can increase the quality of the products as well as reduce the use of resources and pollution. Product quality can be analyzed and classified for individual items during manufacturing by observing their characteristics with AI and machine learning techniques. Machinery wearing can also be detected and possible failures predicted by analyzing data on the machinery's status and the quality of products, supporting predictive maintenance. Environmental monitoring based on AI and machine learning techniques allows for observing and drastically reducing the environmental impact of the manufacturing processes.

### Short Biography

Vincenzo Piuri is Full Professor in computer engineering at the University of Milan, Italy. His main research interests are artificial intelligence, machine learning, biometrics, and industrial applications. He is Fellow of the IEEE and Distinguished Scientist of ACM. He is IEEE Region 8 Director and has been IEEE Vice President for Technical Activities.

## Paolo Gritti



*Title: Application of AI to Low Voltage power distribution devices and digital solutions*

### Summary

Some cases of application of AI to low voltage power distribution will be described. Range of topics is very broad, including products (production process and analysis of product data) and software solutions (engineering tools and digital platforms). Commonalities among such cases will be discussed, and some general conclusion will be drawn, from which a possible vision for future applications of AI will be presented.

### Short Biography

Paolo Gritti is Global Innovation and Common Technology Manager in ABB Electrification Business Area, Smart Power Division.

During past years, he was Global R&D Manager for Digital solutions and Critical Power applications, involved in Digital Transformation of products.

He has a wide and long experience in leading R&D teams for development of SW Tools, APPs, WebAPP and Cloud solutions, Machine Learning, Deep Learning and Analytics, adopting design thinking and Agile development process.

## Viviana D'Alto



*Title: Distributed Artificial Intelligence for Industrial Applications*

### Summary

The use of a distributed approach to artificial intelligence, where machine learning and deep learning solutions can also be implemented at the sensor node and on the sensors themselves, allows for improved response times, increased data security and privacy, as well as reduced energy consumption at the system level. The presentation will introduce which solutions of this type can be exploited in the industrial field, thanks to microcontrollers and new generation intelligent sensors thanks to advanced tools supporting developers in the design of their solutions.

### Short Biography

Viviana D'Alto is the Director of the Artificial Intelligence Software & Tools research group within System Research & Application, an organization of STMicroelectronics that operates horizontally with respect to the product divisions, focusing on system innovation and the introduction of new technologies in ST products. She is responsible for the development of advanced automatic tools for the optimization of artificial neural network models for ST devices enabling Edge AI solutions and participates in the definition of product roadmaps in relation to the support of AI in the company. She is co-leader of AI Affinity Team in ST, federating the know-how and expertise of ST employees in different organizations for the definition of a common AI strategy.

## Serge Dos Santos



*Title: NDE4.0: an optimized merging of Industry 4.0, Nondestructive Testing (NDT) and Artificial Intelligence (AI)*

### Summary

“Industry 4.0” stands for the fourth industrial revolution, the transition from production by computer controlled isolated machines to the concept of a smart factory, where machines, materials, and personnel are digitally connected, to actively adapt to changes in workflow. To assure quality, embracing digital transformation of non-destructive testing (NDT) is essential. NDT must be considered in conjunction with other engineering disciplines. Reliability assessments become a necessary prerequisite for the use of NDT data. Model-based definition, smart robots, artificial intelligence (AI), augmented reality, and digital twins can all be used to enhance NDT inspections to a new level of performance in quality and safety assurance. These new NDT trends are summarized under the term “NDE 4.0” to meet the needs of Industry 4.0.

### Short Biography

Serge Dos Santos received the Master Degree of Physics with the mention Molecular Spectroscopy and Nonlinear Physics from the University of Dijon, France. His research interests are in the broad area of signal processing for Non-Destructive Testing (NDT) and biomedical applications, with a special focus on nonlinear ultrasonics instrumentation, nonlinear sources localization, and multimodal imaging involving nonlinear time reversal methods.

Currently, Serge Dos Santos is Associate Professor at the Department of Industrial Systems of the INSA Centre Val de Loire (INSA-CVL), Blois, France. His bibliography contains 249 references with 126 co-authors, including 1 book, 3 book chapters, 21 reviewed contributions, 175 international conferences (30 invited) and 50 seminars or lectures. For his outstanding contribution to the growth and dissemination of Non-Destructive Testing knowledge to the worldwide community, he was awarded by Academia NDT International as a Full Member (ECNDT 2010, Moscow), responsible of the Signal Processing Chapter, Member of the Council since 2014 and Vice-President since 2021. As IEEE Senior Member since 2016, he is also active in the IEEE France Section as member of the EMB Chapter and Action for Industry (Afi) within the IEEE R8 Region. Since May 2020, he contributes to the NDE4.0 Global Ambassadors Panel. In 2024, he created as a petitioner and became the first chair of the IEEE UFFC France Chapter.