AIM-NET

Workshop 7 - Generative Artificial Intelligence for Manufacturing

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The Artificial Intelligence for Manufacturing Network (AIM-NET) overview

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AIM-NET composition

Manufacturing as a "user of AI" point of **view** is **missing**

A **coordinated effort** is needed

- scale up **from lab to Factory**
- align AI strategy and business goals
- leverage engagement of AI talent and training
- ensuring adoption and value creation

AIM-NET Milestones

07 Apr 2021	28 May 2021	29 Oct 2021	28 June 2022	23 May 2023	24 May 2023	19 Sep 2023	19 Sep 2023	9 Nov 2023
First online meeting	Outline of white paper-	Online Industry event	Industrial Technologies	White paper published	*AIM-NET EC, EFFRA, ADRA, EIT M* Brussels workshop	*European Symposium of AI in Manufacturing* ESAIM 2023	Generative AI WG	ADRA Forum 2023

AIM-NET https://www.aim-net.eu

AI application in industry

Systems level

- AI for supply chain management and planning
- AI for Multi-Process quality control
- AI for Dynamic Production Planning
- AI for autonomous factory control

Workstation level

- AI for Human Machine Interaction
- AI for Machinery Maintenance
- AI for Perception, Reasoning and Decision making
- AI for Dynamic Motion Planning

Process level

- AI for process monitoring and anomaly detection
- AI for Quality inspection
- AI for Process Parameters Selection
- AI for Tool wear prediction
- AI for Dynamic Adaptive Control

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LMS
Laboratory for Manufacturing Systems & Automation

Generative AI for seamless Human Augmentation

Challenges/Needs:

- Cobots as co-workers to Human
- Zero robot programming
- Natural interaction in manufacturing

Solution:

- Product design and process plan
- Integrate LLMs and a behavior tree-based system control

Benefits:

- Reduce programming
- Faster reconfiguration
- Inclusiveness

CONVERGING

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Pitch/Interventions (~ 5 min each)

Sotiris Makris (LMS) - Introduction and welcome - The Artificial Intelligence for Manufacturing Network (AIM-NET) overview

Kosmas Alexopoulos (LMS) -Generative AI for Manufacturing current state and outlook

Mildred Puerto (TECNALIA) - AI services for a resilient manufacturing

Santiago Muiños Landin (AIMEN) - Generative AI for sustainable product design

Heli Helaakoski, Jurmu Marko (VTT) - Generative AI applications in manufacturing industry

Rolandas Lepardinas (MiV) - Robots, Additive Manufacturing and Virtual Twins for Generative Production

Davide Rua Carneiro (INESC-TEC) - How Generative AI will change decision making process in manufacturing

Elena Urkia (IDEKO) - AI Applied to Manufacturing

Mikkel Labori Olsen (DTI) - Closing the Loop: Enhancing Circular Manufacturing with Generative AI

Bart Meyers (Flanders Make) – Cherishing the expert's knowledge: a hybrid method for generating design alternatives

Andres Salvador Paradela Estevez (CTAG) – Applications of Generative A.I. in Manufacturing Digital Twins

Mostafizur Rahman (MTC) – Generative AI Services in Manufacturing: Capabilities, Limitations, Risks and Mitigations, and the Role of AI Governance

Discussion

The presentations will be shared to the organisers of ADRF. Feel free to share a publishable version if needed

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