

# IEEE CASE 2021

<https://case2021.sciencesconf.org/>

## Special Session Call for Papers

### Machine Learning and Data Analytics for Failure Analysis in Manufacturing Industry

**Sponsors:** the special session is sponsored by FA4.0 Eureka project.

**Goal:** In manufacturing industry, products are constituted by increasingly integrated and complex systems. Despite their complex functionality, these high technological products must operate reliably and safely in daily use. Post-production **Failure Analysis** is a specific process, requiring high technology to build a progressive diagnosis and understanding of failure factors at production time, leading to in-depth root cause analysis. In spite of a highly technological environment, the industrial process of Failure Analysis is very far from using the full potential of automation: digitalization of industry 4.0 offers key challenges to improve the efficiency of Failure Analysis, and bring it towards Failure Analysis 4.0.

**Artificial intelligence (AI) technics and Machine learning (ML) algorithms** are increasingly playing a leading role in suggesting solutions in fields related and not limited to anomaly detection, failure analysis, root cause analysis and feature analysis flow in many domains (Rezvanizani et al., 2014 ; Vasantlal Shah, 2017; Okoh et al., 2017; Guillermo et al. 2019). Recently, innovative AI/ML approaches, based on developed and adapted statistical learning methods, reached the realm of Industry 4.0 to create, improve and automate solutions on all levels, starting from pre-treatment and data structuring (Zimmer et al., 2019) to putting forward an end to end model for fault diagnosis and prognosis (Yue et al. 2018).

**The objective of this session** is to contribute to an international state of the art on the aforementioned subject, highlighting recent and ongoing works focused on the industrial application field. The ambition is to show the power of combining statistical approaches with innovative ML/AI techniques, in an attempt to extract significant causal information on production defects, from heterogeneous databases related to specific industrial domains.

#### **List of topics:**

- Artificial intelligence and Machine learning for Failure Analysis
- Statistical models and formalisms for production defect analysis
- Industry 4.0 to support failure analysis, on high technology manufactured devices
- Anomaly detection on industrial devices
- Automation of Failure Analysis process
- Root cause analysis, for industrial devices' failures.

#### **Organizers:**

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**Dates and submission procedure:**

February 14, 2021: submission intention with title and short abstract (100 words) to the session chairmen.

March 1st, 2021: Regular & special session paper submission

May 15, 2021: Paper acceptance notification

June 15, 2021: Final paper submission

**Regular papers** can be submitted with a length of 6-8 pages. For the final submission, a manuscript should be of 6 pages, with 2 additional pages allowed but at an extra charge.

There is a "**Special Session Presentation-Only**" option. Only a two-page abstract is required. Accepted submissions will make oral presentations at the conference and be listed in the final program, but will not appear in IEEE Xplore.

Submission procedure and more information on the web site <https://case2021.sciencesconf.org/>