

Introducing the initial Mini-Symposium focused on:

Emerging Techniques for Reliability and Predictive Maintenance

Empowering reliability and predictive maintenance with Digital Twins and AI

Nov. 18th 2024, 9:00-17:00

Amphi IV, Batiment Eiffel, CentraleSupélec, 3 rue Joliot Curie, 91190, Gif-sur-Yvette, France¹

Online: <https://events.teams.microsoft.com/event/237a980e-2783-4bed-ad98-d27985539dcf@61f3e3b8-9b52-433a-a4eb-c67334ce54d5>

This Mini-Symposium aims to gather leading experts to discuss the implementation and implications of recent advances for reliability analysis and maintenance planning, specifically the integration of predictive maintenance, AI, digital twins and other related topics. There is much exciting new research on Digital Twins and AI that is making fundamental advancements in reliability and predictive maintenance. The increasing availability of condition-monitoring data has incentivized in recent years the development of machine learning for prognostics and diagnostics, big data analytics, generative AI. With these, Digital Twins have also become increasingly performant.

You are cordially invited to share your knowledge and opinions, and to learn more on the application of Digital Twins and/or AI models to support reliability and predictive maintenance.

Confirmed Speakers



Anne Barros,
Professor,
CentraleSupélec,
France



David Coit,
Professor, Rutgers
University



Christophe
Berenguer, Professor,
Grenoble Alps Univ.,
France



Konstantinos C.
Gryllias, Professor,
KU Leuven,
Belgium

Organizers

Honorary Chair – Prof. Anne Barros, CentraleSupélec, Université Paris-Saclay, France

Prof. Zhiguo Zeng, CentraleSupélec Université Paris-Saclay, France

Prof. David Coit, Rutgers University, USA

Dr. Mihaela Mitici, Utrecht University, The Netherlands

¹ How to access the workshop site: <https://www.centralesupelec.fr/en/one-school-three-campus>

Agenda (Tentative)

- 8:30 – 9:00: Registration, Welcome coffee
- 9:00 – 9:30: Prof. Anne Barros, Centralesupélec France: Welcome speech; Recent advancements in reliability and resilience at RRSC, CentraleSupélec.
- 9:30 – 10:25: Prof. Zhiguo Zeng, Centralesupélec France: *Empowering predictive maintenance with digital twins and AI: An application on robots.*
- 10:25 – 10:30: Coffee break
- 10:30 – 11:25: Prof. Jie Liu, Beihang University, China: *Causality-based representation learning for fault diagnosis of complex systems.*
- 11:25 – 11:30: Coffee break
- 11:30 – 12:25: Prof. Konstantinos Gryllias, KU Leuven, Belgium: *Fault diagnosis based on digital twins and transfer learning*
- 12:25 – 14:00: Lunch
- 14:00 – 14:55: Prof. Giovanni Lugaresi, KU Leuven, Belgium: *Data-Driven Modelling of Digital Twins for Circular Production Systems*
- 14:55 – 15:00: Coffee break
- 15:00 – 15:55: Prof. Christophe Berenguer, Grenoble INP, France: *On the degradation and RUL Control of Degrading Controlled Systems*
- 15:55 – 16:00: Coffee break
- 16:00 – 17:00: Prof. Mihaela Mitici, Utrecht University, the Netherlands and Prof. David Coit, Rutgers University, USA: *Predictive maintenance at the intersection between OR and ML – methodological challenges and opportunities*
- 17:00 – 17:30: Closing cocktail, announcement of next workshop, discussions.

Registration

Registration is free but obligatory (we rely on this information to organize coffee, lunch break and cocktail). Please register before **November 13, 2024** from here:

<https://forms.office.com/Pages/ResponsePage.aspx?id=uOPzYVKbOkOk68ZzNM5U1dm3y504xNAiFhOMzayh0xUNzhaRk9ONDZHSvdCM1RDS0syMEFFUzQxRS4u>

Online participation is also possible but requires registration:

<https://events.teams.microsoft.com/event/237a980e-2783-4bed-ad98-d27985539dcf@61f3e3b8-9b52-433a-a4eb-c67334ce54d5>