



Inteligência Artificial e Machine Learning

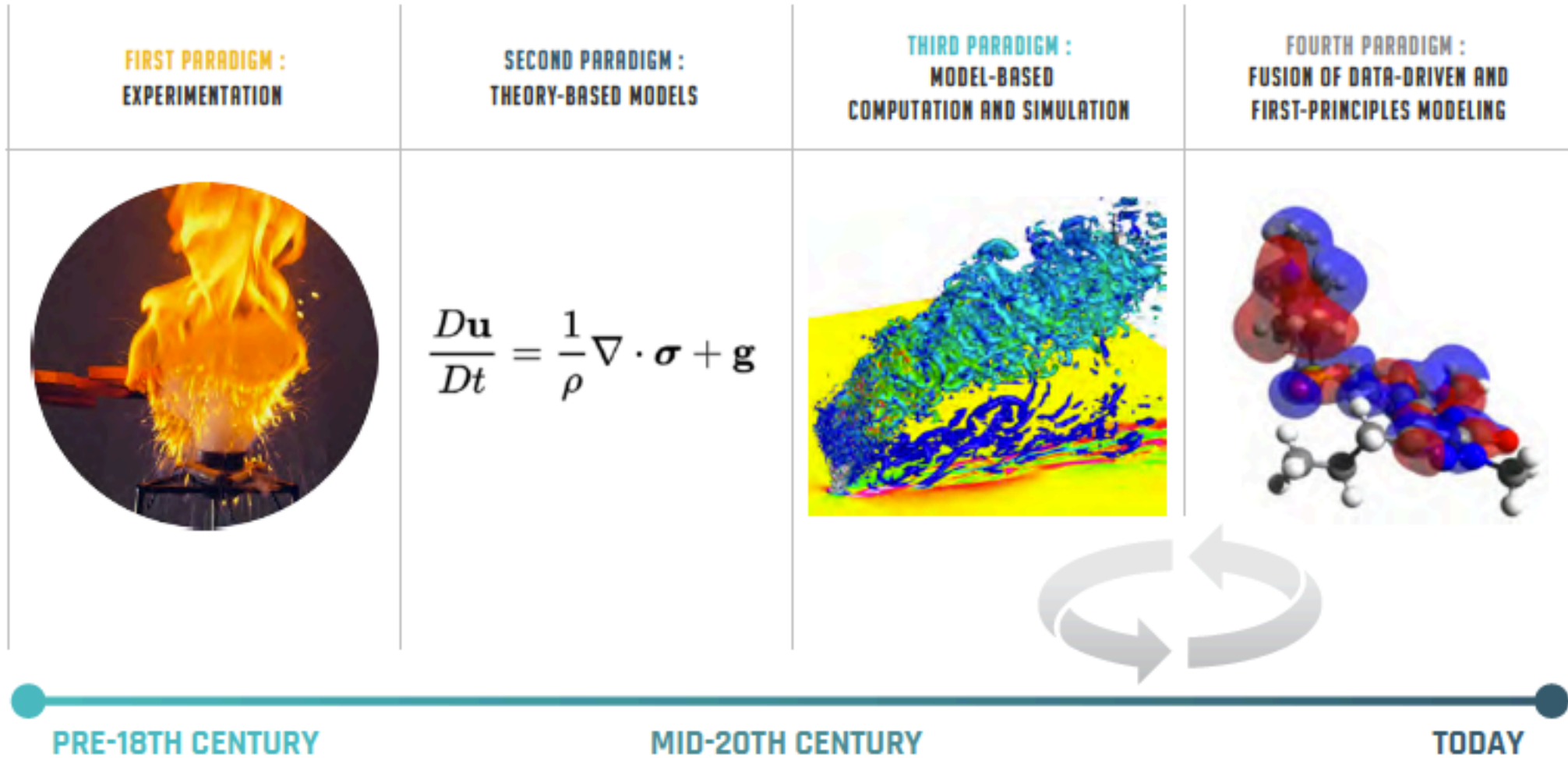
Fevereiro de 2021

What is Artificial Intelligence?

Artificial intelligence (AI) is wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. AI is an interdisciplinary science with multiple approaches, but advancements in [machine learning](#) and deep learning are creating a paradigm shift in virtually every sector of the tech industry.

<https://builtin.com/artificial-intelligence>

COMPUTATIONAL SCIENCE + ENGINEERING PARADIGMS



xPRO

<https://xpro.mit.edu/programs/program-V1:xPRO+MLX/>

faculty research and course presentations, 2020.

MIT xPRO, "Machine Learning, Modeling, and Simulation: Engineering Problem-Solving in the Age of AI,"

Um novo paradigma (convergência de tecnologias) Digital Twins

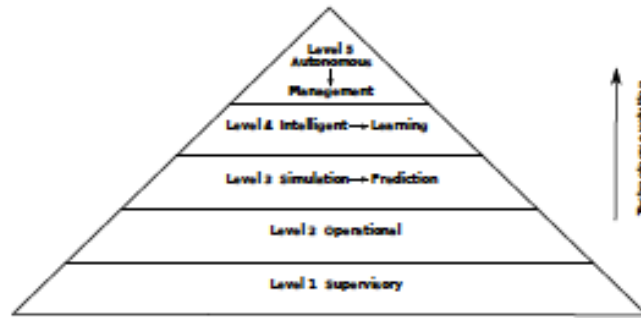
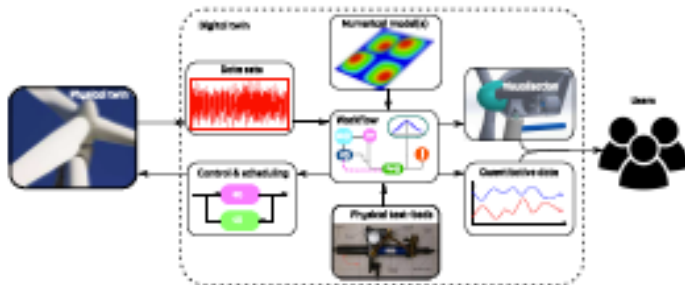
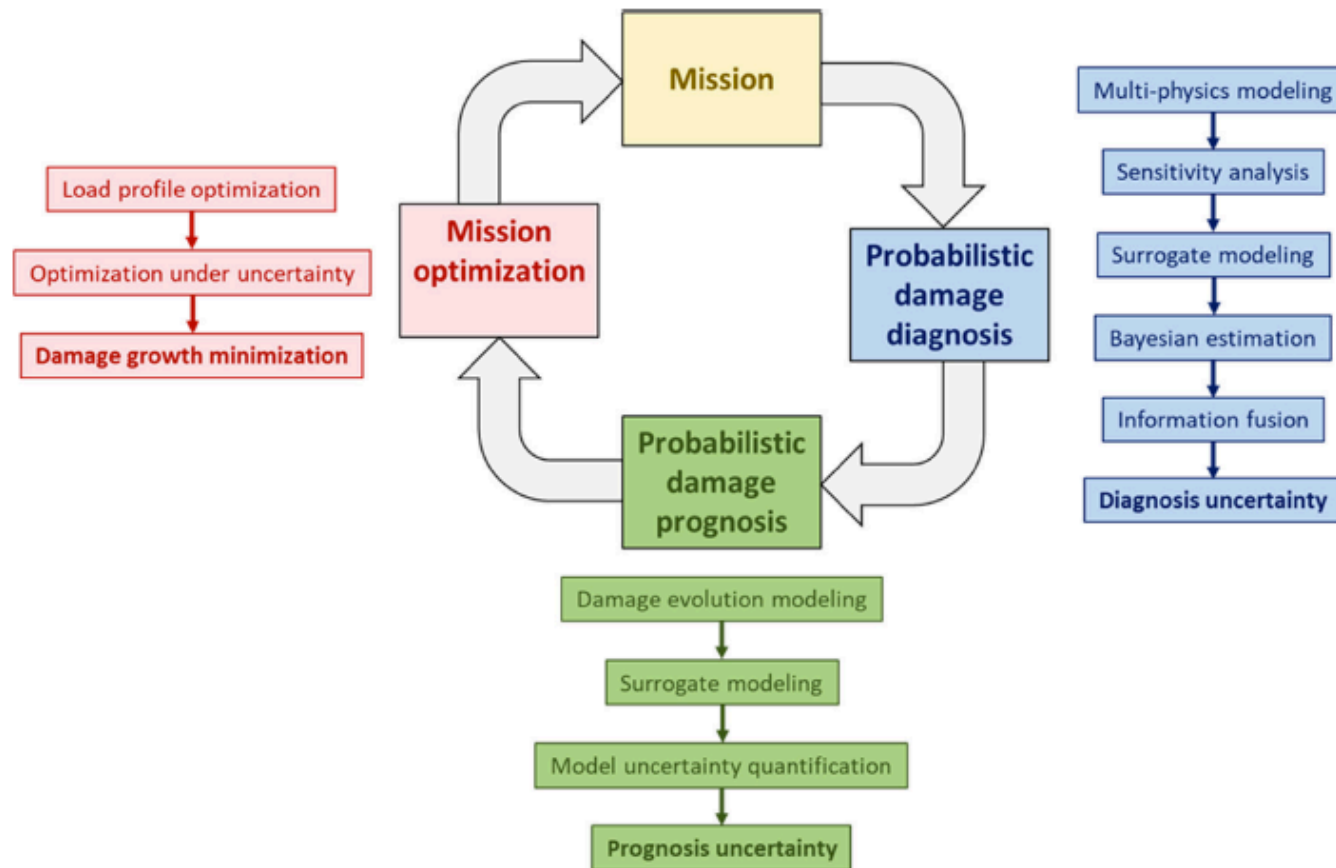


Fig. 1- A capability hierarchy for digital twins where each level encompasses all the previous capabilities of the levels

- Digital Twins: State-of-the-Art and Future Directions for Modeling and Simulation in Engineering Dynamics Applications DJ Wagg, K Worden, RJ Barthorpe, P Gardner
- ASCE-ASME J Risk and Uncert in Engrg Sys Part B Mech Engrg 6 (3)



Digital Twin : integração entre modelos baseados na física e machine learning

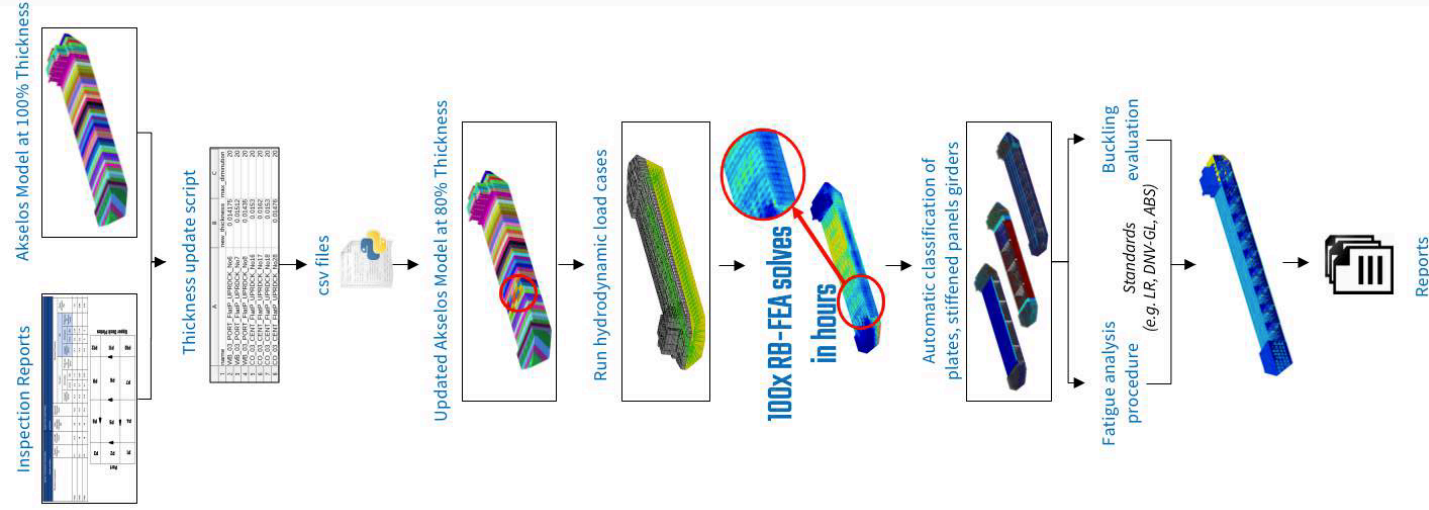


Digital twin approach for damage-tolerant mission planning under uncertainty

Pranav M. Karve^a, Yulin Guo^a, Berkcan Kapusuzoglu^a, Sankaran Mahadevan^{b,*}, Mulugeta A. Haile^b

**Monitoração da integridade física de sistemas operando em condições extremas:
Diagnóstico – Prognóstico – Tomada de decisões**

OPTIMIZING FPSO INSPECTION ROI WITH AKSELOS DIGITAL TWINS



Inteligência Artificial....

- Convergência de diferentes tecnologias
- Automação "extrema" – I. 4.0
- Articulando "software" com "hardware"
- Impulsionada por Machine Learning
- Como seres humanos: racionalizar e aprender

O espírito
deste curso...

“You don't have to become a machine learning expert to apply these new tools effectively. Engineers and scientists who more fully understand where machine learning can help – and where it can't – **can achieve real gains from these tools.”**

– Youssef Marzouk, Professor of Aeronautics and Astronautics, MIT, and Co-Director, MIT Center for Computational Science and Engineering