DIGITAL TWINS

BY: KALEB BAUSCH
OVERVIEW

• What is a Digital Twin?
• The Product Lifecycle
• Living Learning Model
• Example in Action
• Human-Digital Twins
WHAT IS A DIGITAL TWIN?

“In simple terms, a digital twin is the digital representation of a physical product in all its aspects.”
- Dr. Norbert Gaus of Siemens Corporate Technology

“Digital Twin is most commonly defined as a software representation of a physical asset, system or process designed to detect, prevent, predict and optimize through real time analytics to deliver business value.”
- Dr. Colin Parris (GE Digital’s Chief Technology Officer)
“ALL ITS ASPECTS”
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• Ex. Manufacturing
  • Mechanical
  • Embedded software
  • Flow mechanics
  • And in many, many other aspects

• Covers the entire product lifecycle
PRODUCT LIFECYCLE
3 BIG STEPS TO DESIGN A DIGITAL TWIN

1. What is the business value you want?
   • Availability, more production, reduced cost, etc.

2. Can I get the right data and domain knowledge?
   • Can we find the insights?

3. Making Models
   • AI models, physics models, etc.
THE DATA PROBLEM

• Sometimes you have Big Data
  • Google delivers 29.8 billion ad impressions a day

• Sometimes you need to make it
  • Physics and Simulations
PRODUCT LIFECYCLE

Operational Insights ➔ Better Design
PRODUCT LIFECYCLE

Continuous Learning ➔ Better Manufacturing
PRODUCT LIFECYCLE

Informed Service & Support ➔ Better Operations
3 BENEFITS OF HAVING A LIFE IN PARALLEL

• Early warnings on a problem
• Continuous prediction
• Dynamic optimization
SEE ONE “IN-ACTION”
HUMAN-DIGITAL TWINS
(THE GOOD AND THE SCARY)
HEALTH - MECHANICS
PERSONALIZATION THROUGH DIGITAL TWINS

• Amazon personalization
• Google’s personalized ads
• The “YouTube algorithm”
THE BIG SCARE - DIGITAL TWIN MANIPULATION

• Who is your online twin?
• What if someone wanted to make you do/think something?
• Information is power
REFERENCES


OTHER INTERESTING VIDEOS

• https://youtu.be/2dCz3oL2rTw
• https://youtu.be/LMmB5VK0nQo
• https://youtu.be/2XAXKNcsb1M