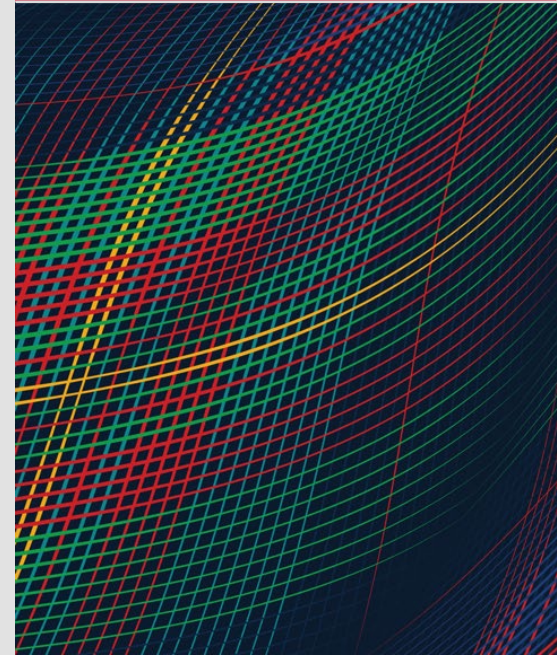


Systems Engineering applied to Artificial intelligence in context of Cyber-Physical Systems.

OCTOBER 12, 2023

Robin Yeman



Introduction



Space Domain Lead

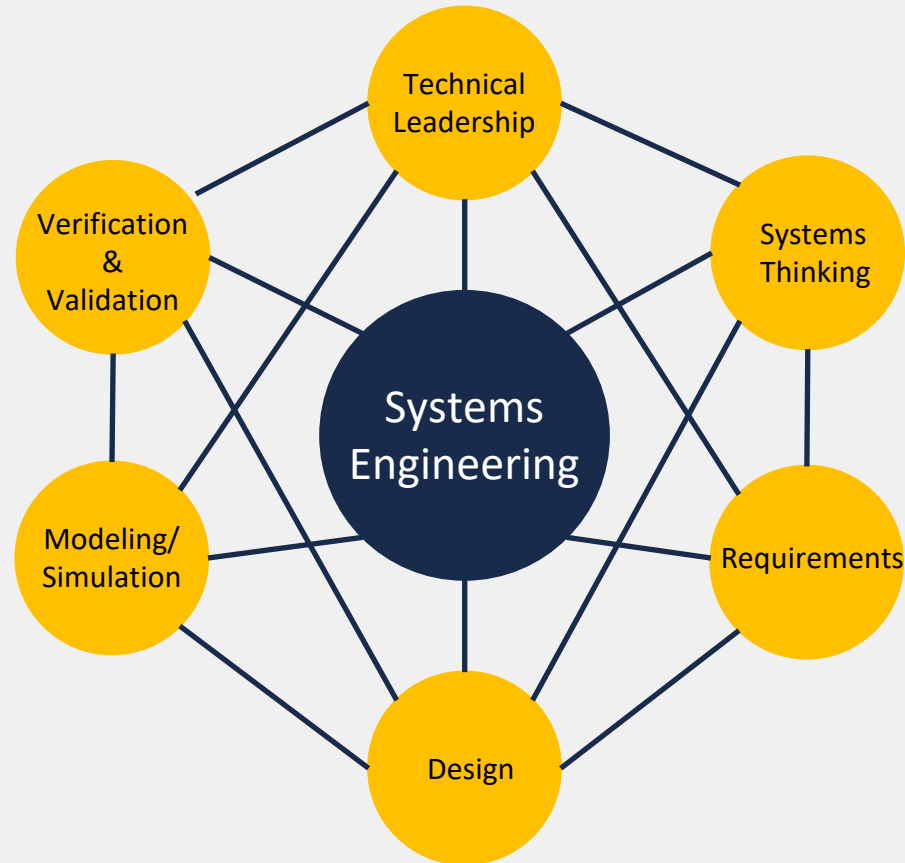
Carnegie Mellon University
Software Engineering Institute

Expertise spanning over twenty-eight years in software engineering with focus on Digital Engineering, DevSecOps, and Agile building large complex solutions across multiple domains from submarines to satellites. She advocates for continuous learning with multiple certifications including SAFe Fellow, SPCT, CEC, PMP, PMI-ACP, and CSEP. She is a Systems Engineering PhD candidate at Colorado State researching best practices to deliver complex safety critical solutions using Agile and DevSecOps.

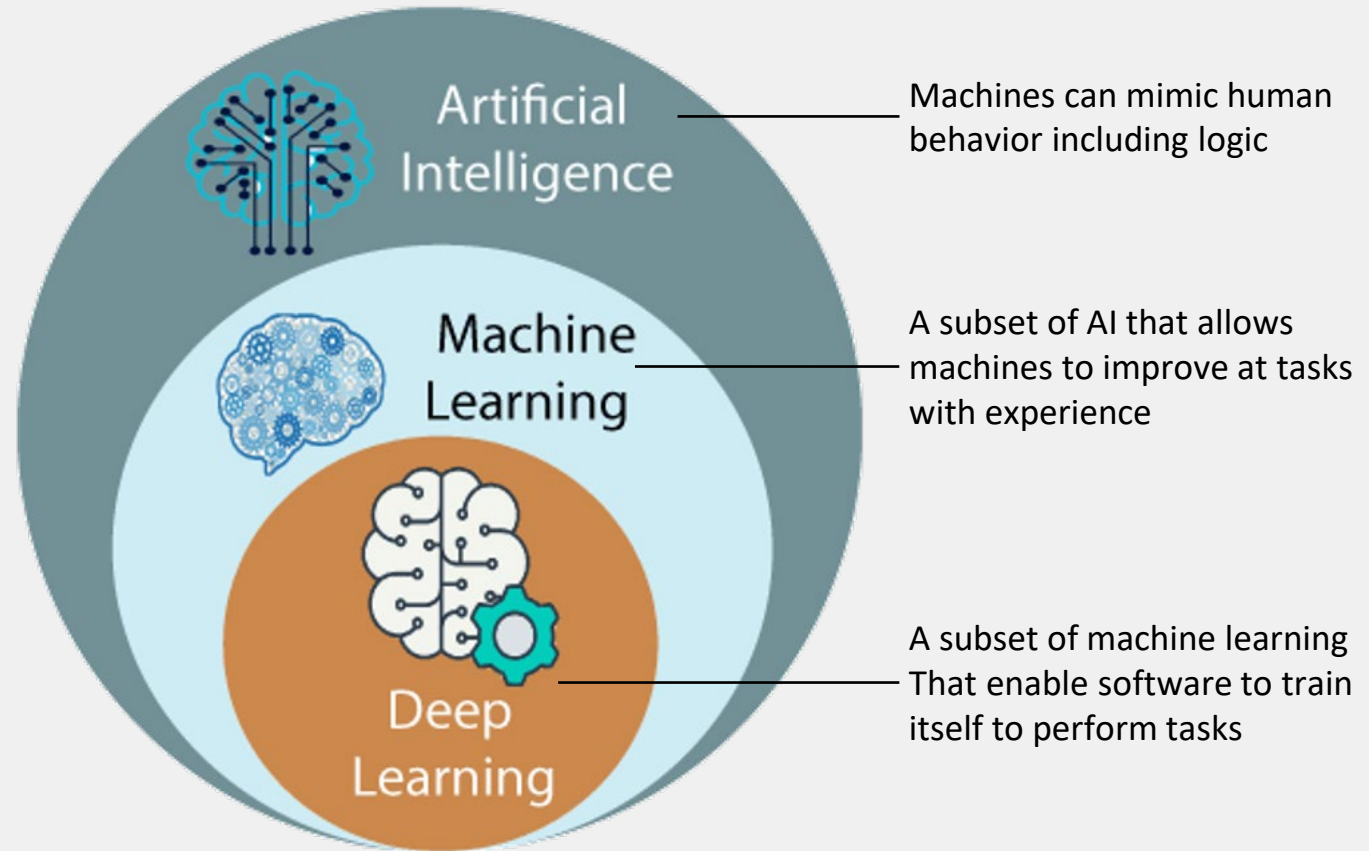
Agenda

- Introduction
- SE / AI / CPS
- Intersection of SE and AI
- SE applied to AI for CPS
- Role of SE applied to AI
- Benefits / Challenges
- Questions

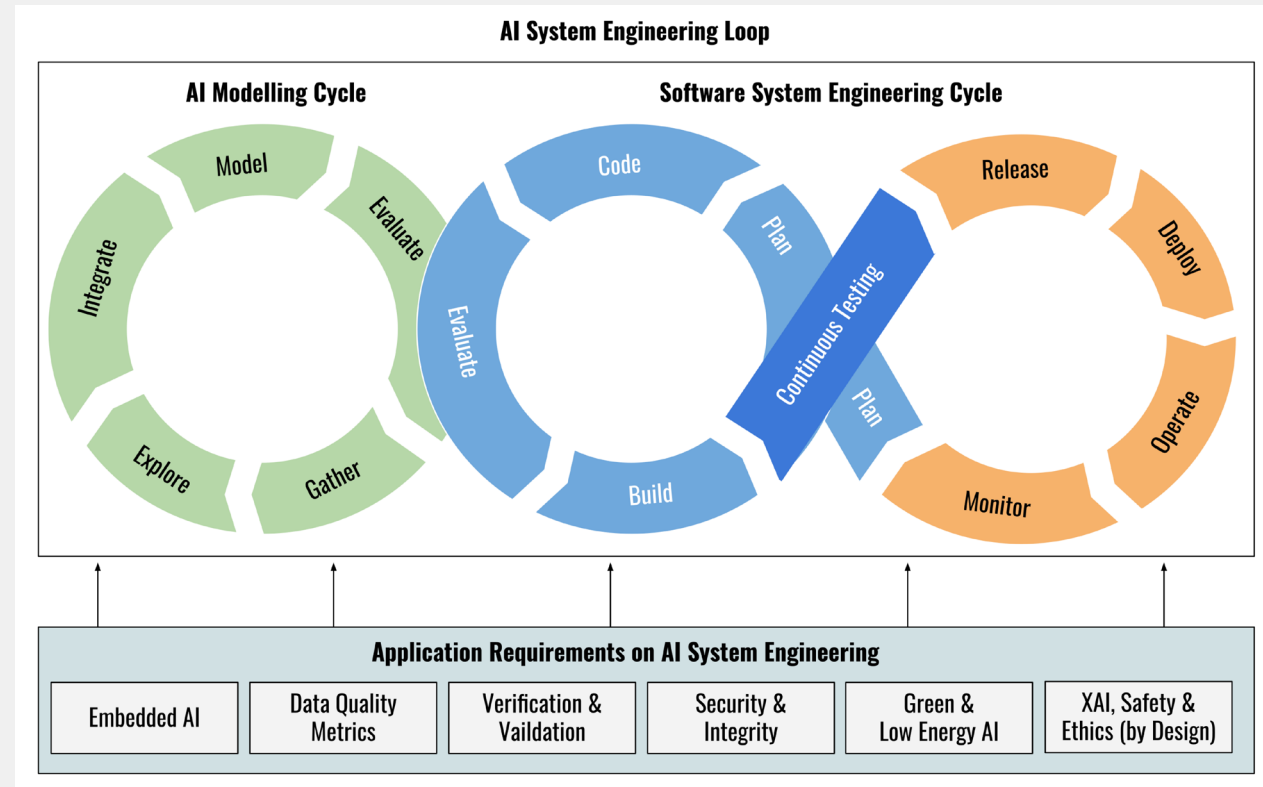
Systems Engineering



Artificial Intelligence

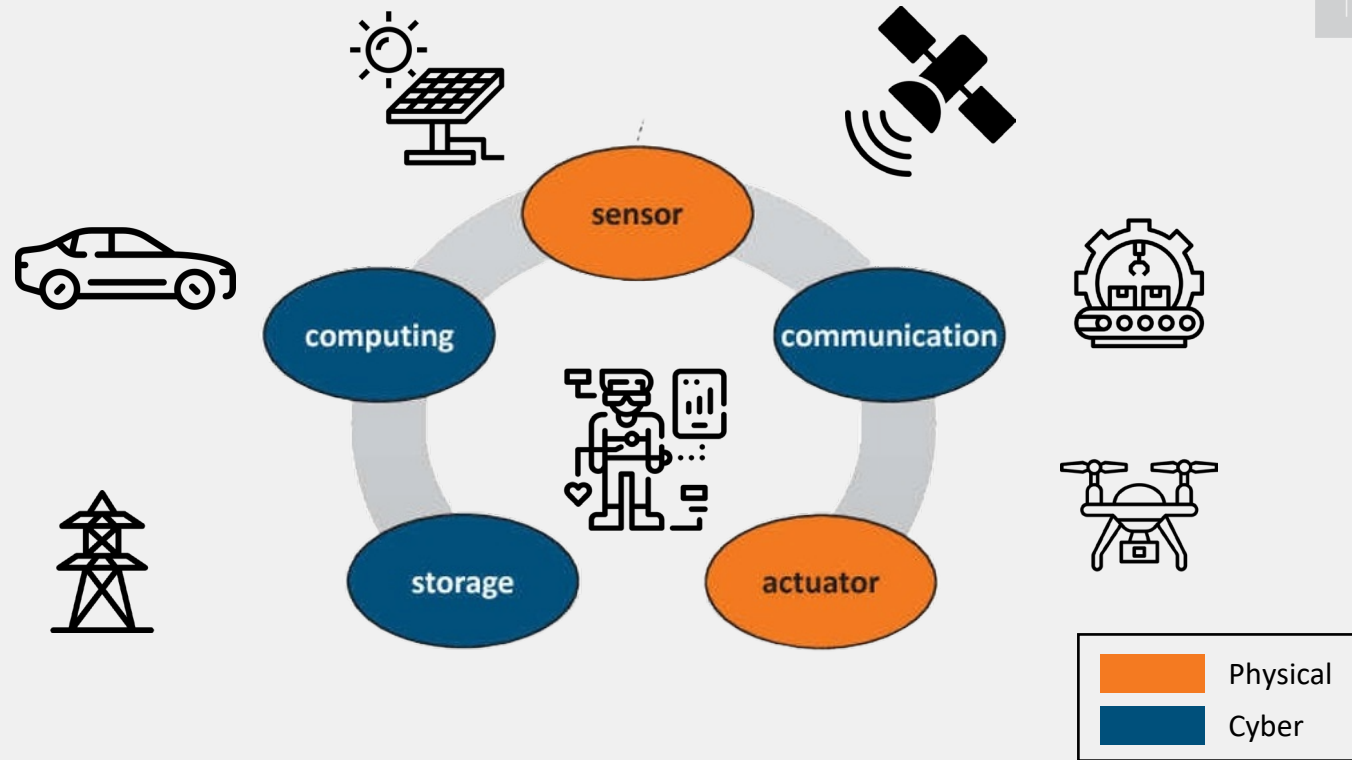


Intersection of Systems Engineering for AI



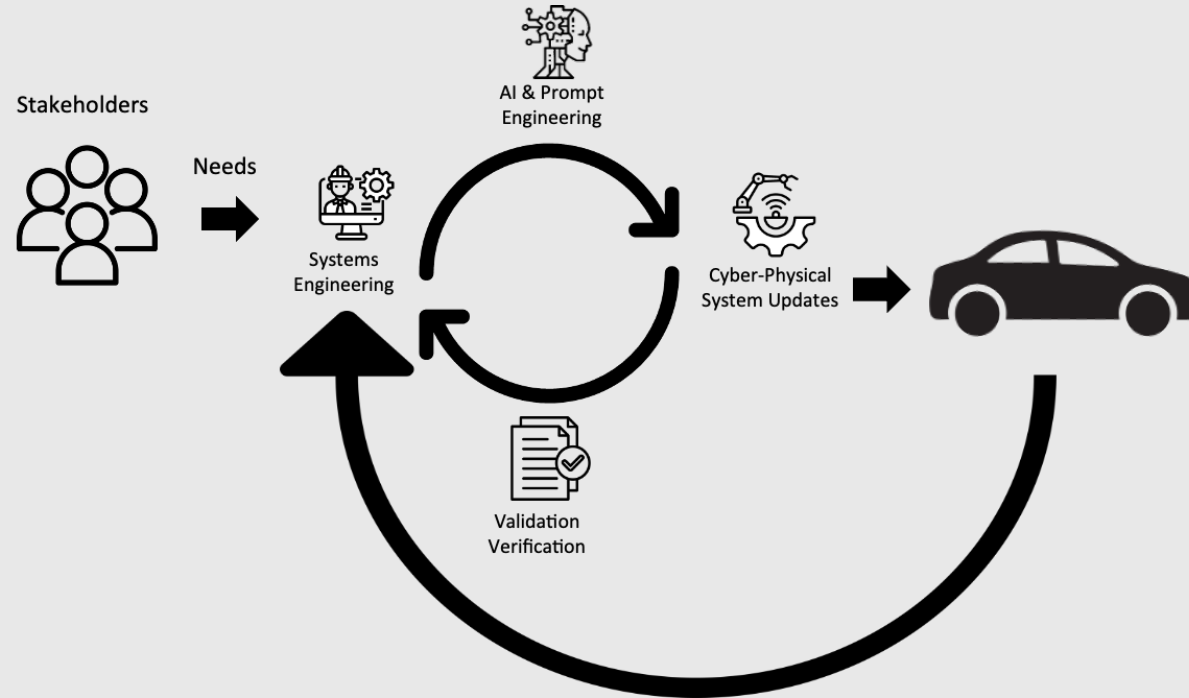
Fischer, Lukas & Ehrlinger, Lisa & Geist, Verena & Ramler, Rudolf & Sobieczky, Florian & Zellinger, Werner & Brunner, David & Kumar, Mohit & Moser, Bernhard. (2020). AI System Engineering—Key Challenges and Lessons Learned. Machine Learning and Knowledge Extraction. 3. 56-83. 10.3390/make3010004.

Cyber-Physical System (CPS)

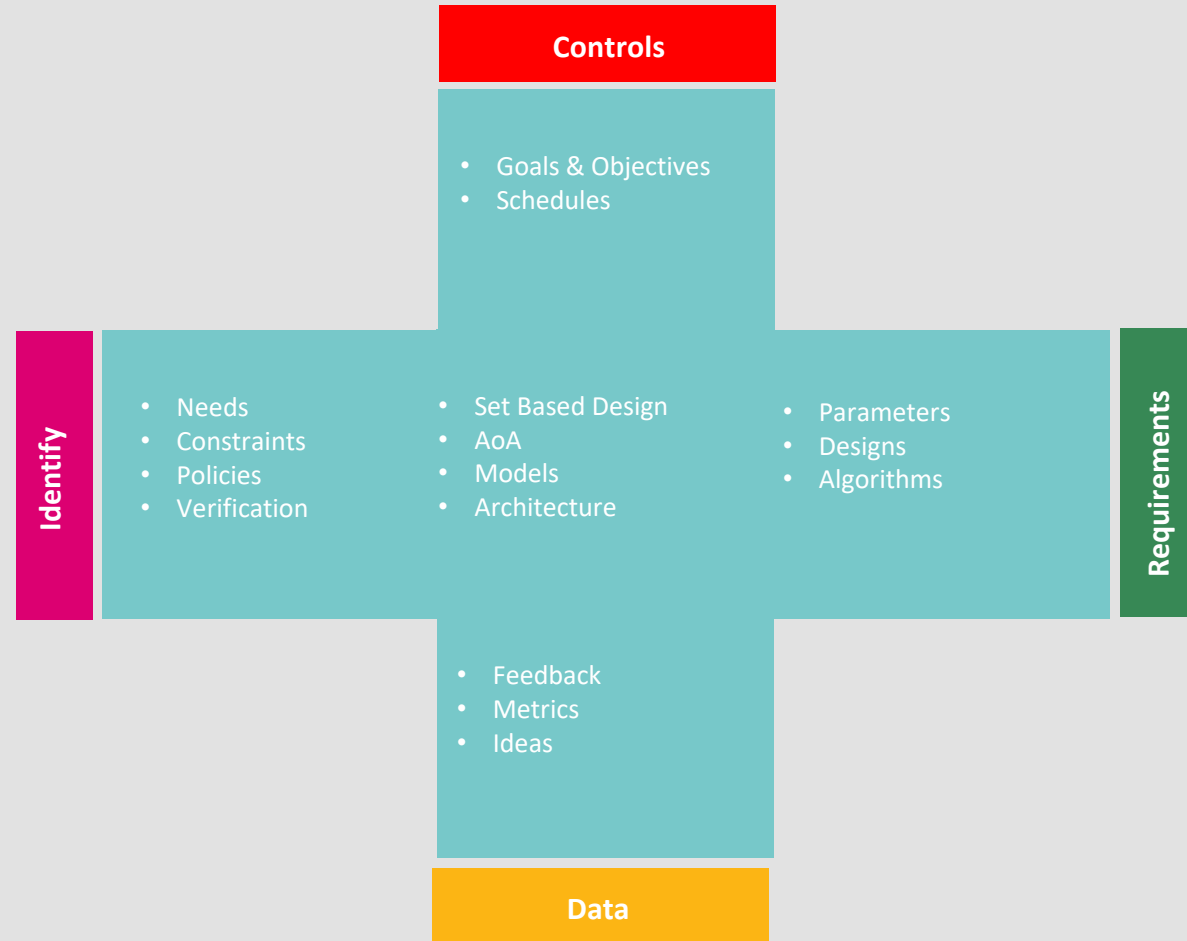


Most of these systems are software defined and hardware enabled

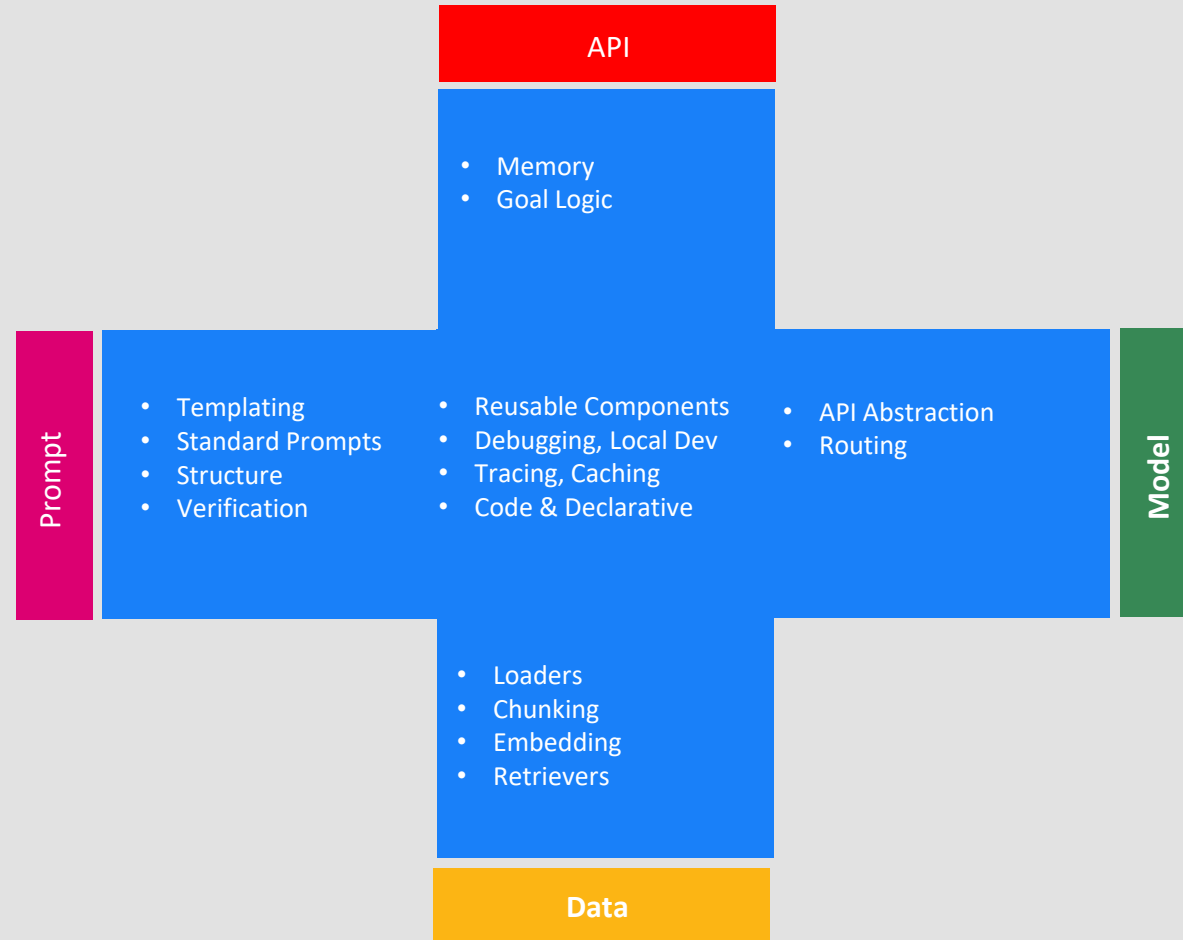
SE applied to AI in context of CPS



Systems Engineering



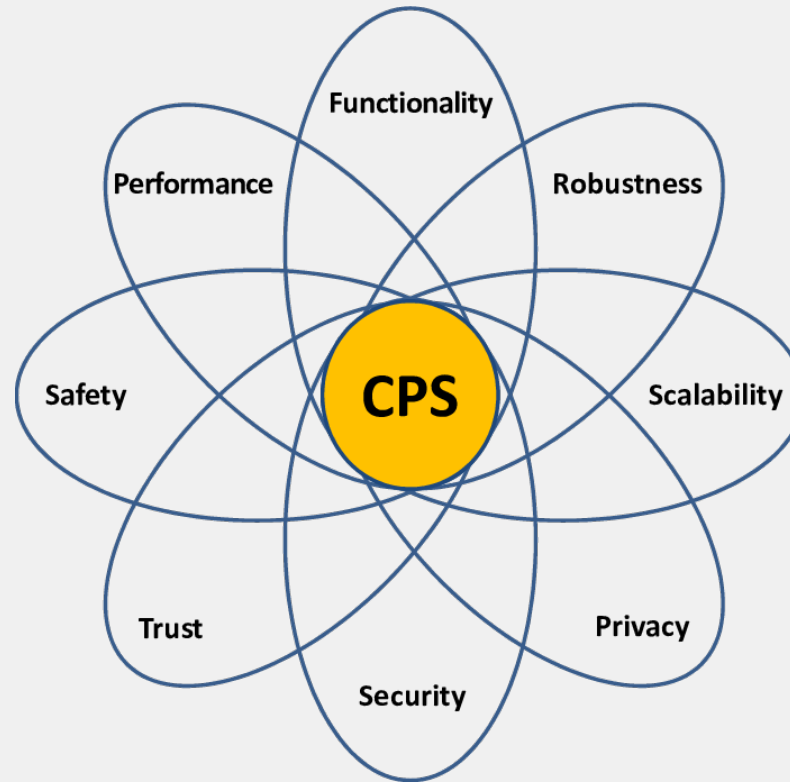
Prompt Engineering



Benefits AI for CPS



Challenges of AI Cyber-Physical

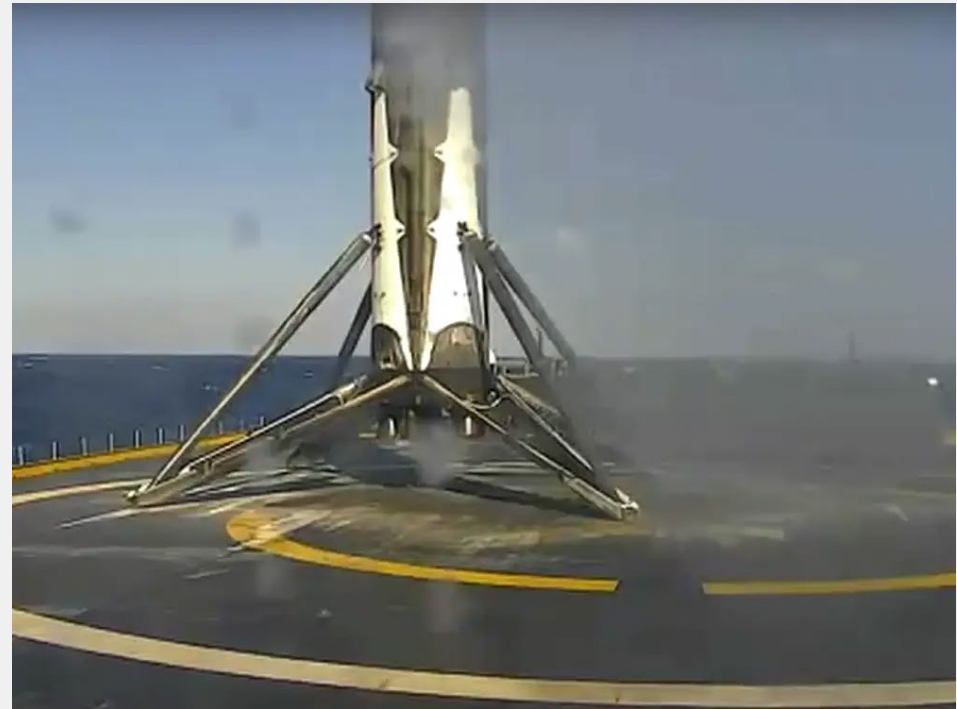




Virtual
prototyping and
simulation enable
Bosch to move at
Speed of
Innovation



SpaceX used
SE and AI to
Build their
reusable
rocket
technology





Q & A

ASK AWAY!