Combining Data-Driven and Knowledge-Based AI Paradigms for Engineering AI-Based Safety-Critical Systems

Engineering AI-based critical system induces various challenges

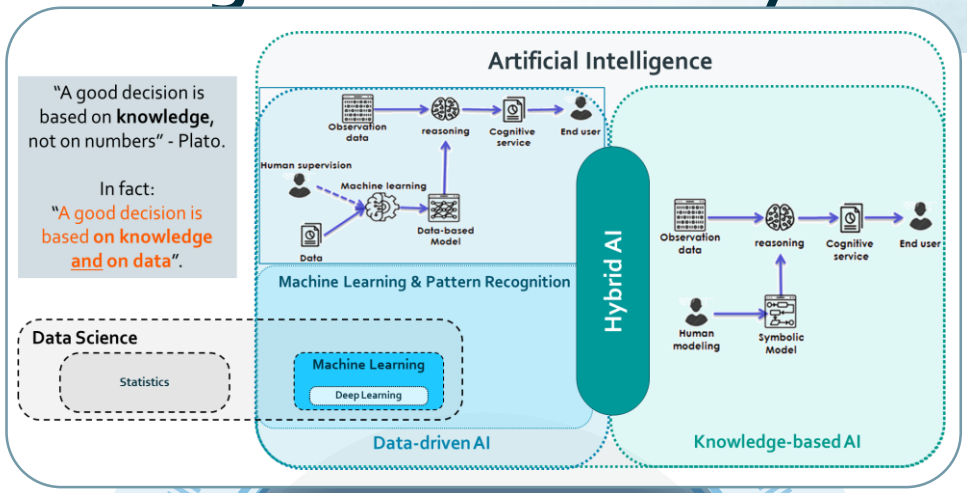
Data & Knowledge Engineering
- ✓ Feature characterization
- ✓ Data & Knowledge quality
- ✓ Representativeness
- ✓ Corpus balancing & biases reduction

Algorithm Engineering
- ✓ Specifiability
- ✓ Traceability
- ✓ Correctness / Validity
- ✓ Accuracy
- ✓ Complexity
- ✓ Transparency
- ✓ Vulnerability

Human-AI Interaction
- ✓ Usability
- ✓ Interpretability / Explainability
- ✓ Human-AI dialogue
- ✓ Ethics by design

Safety & Cybersecurity
- ✓ Provability
- ✓ Verifiability (test)
- ✓ Robustness
- ✓ Integrity / Resilience

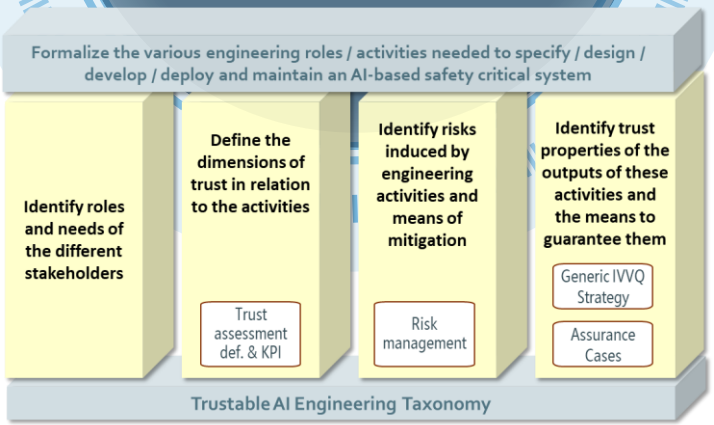
Software & System Engineering
- ✓ Repeatability
- ✓ Performance
- ✓ Maintainability
- ✓ Auditability
- ✓ Monitorability



Trustworthy AI concepts, attributes & KPIs

Revisiting all engineering disciplines to propose a sound deployment of AI components within safety-critical systems

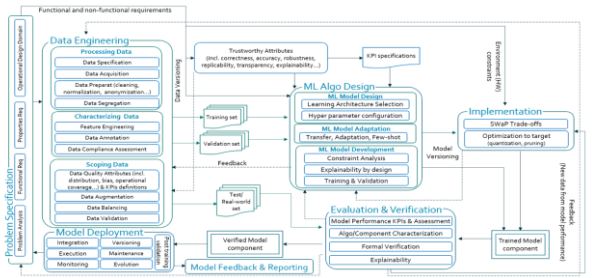
Trust assessment def. framework



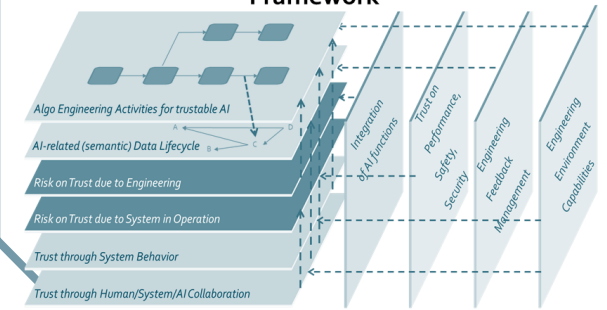
A 1st end-to-end framework to assess Trust through Risk Mgmt & Assurance Case

Trustworthy attributes definition & associated KPIs

Trustworthy ML Algo Engineering



The Trustable AI Engineering Analysis Framework



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