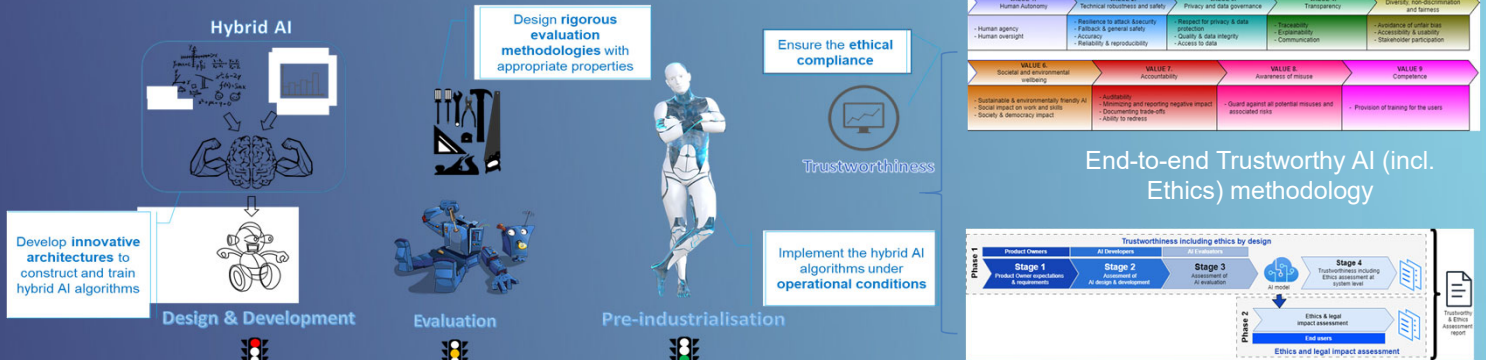
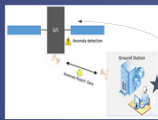


Ambition: pioneer the trustworthiness of industrial-grade hybrid AI



Use Cases

Smart satellite
FDIR



Anomalies of
Reaction
Wheels

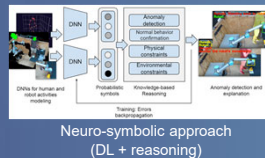
Physics-informed
approach (NN)

ex: robustness
(formal method)

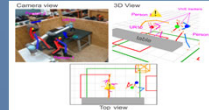
Robotic collaborative work



Safety issues



Neuro-symbolic approach
(DL + reasoning)



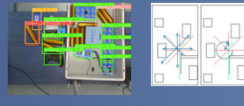
ex: reliability (empirical method)

Robotic manipulators



Object detection
& recognition

Navigation (person
detection & distance
estimation)

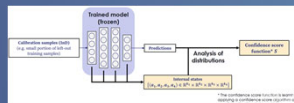


Object classification (DL) + Markov
Decision Processes approach (RL)

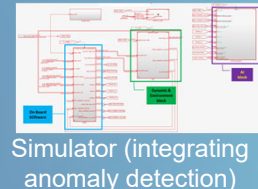


ex: explainability (statistical
method)

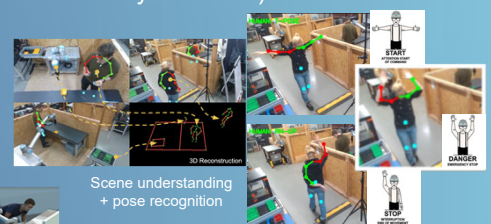
+ Confidence scores
(OoD)



Demonstrators



Simulator (integrating
anomaly detection)



Scene understanding
+ pose recognition



+ synthetic scene generation



Object classification
(incl. unknown objects)



Observation space
(collision avoidance)

+ statistical model to predict
safety, efficiency



Design & Development

- A data visualisation tool to decrease the complexity of the dimensionality
- 3 different and innovative hybrid AI solutions (generalisation, beyond SoTA)
- An intermediate and additional level of trustworthiness: confidence scores

Evaluation

- Variety of metrics
- 3 evaluation flows (1 per UC), implementing various tooling-up methods that addressed 3 main trustworthy AI criteria: reliability, robustness and XAI
- Iterative and rigorous evaluation methodology to enhance hybrid AI solutions

Operational conditions

- 3 demonstrators integrating HAI solutions and involving multiple representative industrial-based scenarios
- AI trustworthiness synthesis to compare with results of previous steps
- Overall performance improvement of more than 15%

Ethics

- AI trustworthiness transverse methodology and results addressing both technical and ethical aspects (before deployment) + legal impact assessment addressing end-users (after deployment)
- Continuous guidance and support to respect the ethical requirements by internal/external ethical advisors

Main results