ULTIMATE

mUlti-Level Trustworthiness to Improve the Adoption of hybrid artificial intelligencE

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OBJECTIVES

- Artificial Intelligence (AI) has entered the business mainstream, opening opportunities to boost productivity and innovation
- Still, **AI suffers limitations** hindering wider adoption in industrial settings.
- Both **model and data-driven AI approaches naturally complement** each other.
- However, hybrid AI does **not fully address the issue of trustworthiness** (validity, explainability and ethics).
- ULTIMATE will pioneer the development of **industrial-grade hybrid AI** based on **3 stages** to ensure trustworthiness and **promote the widespread adoption of hybrid AI in industry**.
- Main objectives are the following:
  1. Develop **data representation / visualization models**, and propose **innovative architectures** to construct and train hybrid AI algorithms.
  2. Design **rigorous evaluation methodologies** with appropriate properties (e.g. accuracy. robustness, safety) to strengthen their trustworthiness.
  3. Implement the developed hybrid AI algorithms under **operational conditions** (Robotics and Space) and fully assess them.
- **Ensure the ethical compliance and trustworthiness** through qualitative / quantitative approaches along all these stages.

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EXPECTED IMPACTS

- IMPACT 1: **advance the current knowledge on the design, development, and deployment** of production-grade hybrid AI and on rigorous evaluation methodologies (e.g. confidence estimation methods) to **significantly increase the trustworthiness**.
- IMPACT 2: **go beyond some existing standards as a reference in AI solutions** to meet industrial requirements (related to safety for instance) to cover AI systems trustworthiness more adequately including **social and ethical issues**.
- IMPACT 3: **ensure that AI development and implementation is human-centric** and is a force for good in society whilst evaluating the consequences taking into account the criteria of people (compliance with appropriate legal, ethical and societal foundations) and the machine's criteria.
- IMPACT 4: support the creation of **high quality jobs** where humans are making **informed decisions** using AI outputs rather than simply executing tasks they do not understand.