

# **Discussion on the paper “Roadmap: Integrating artificial intelligence in structural health monitoring systems”**

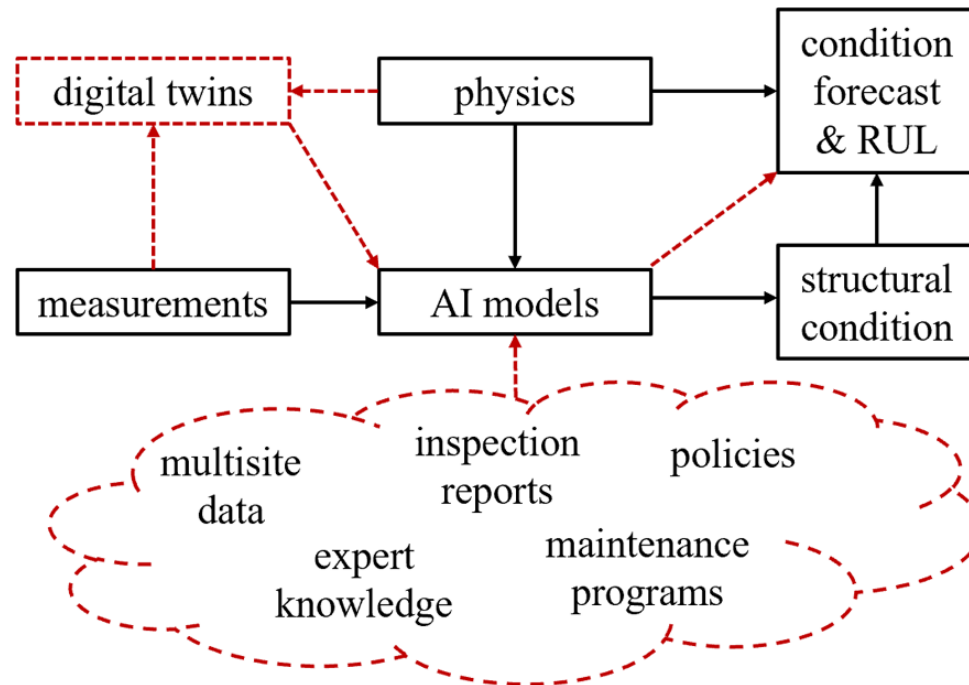


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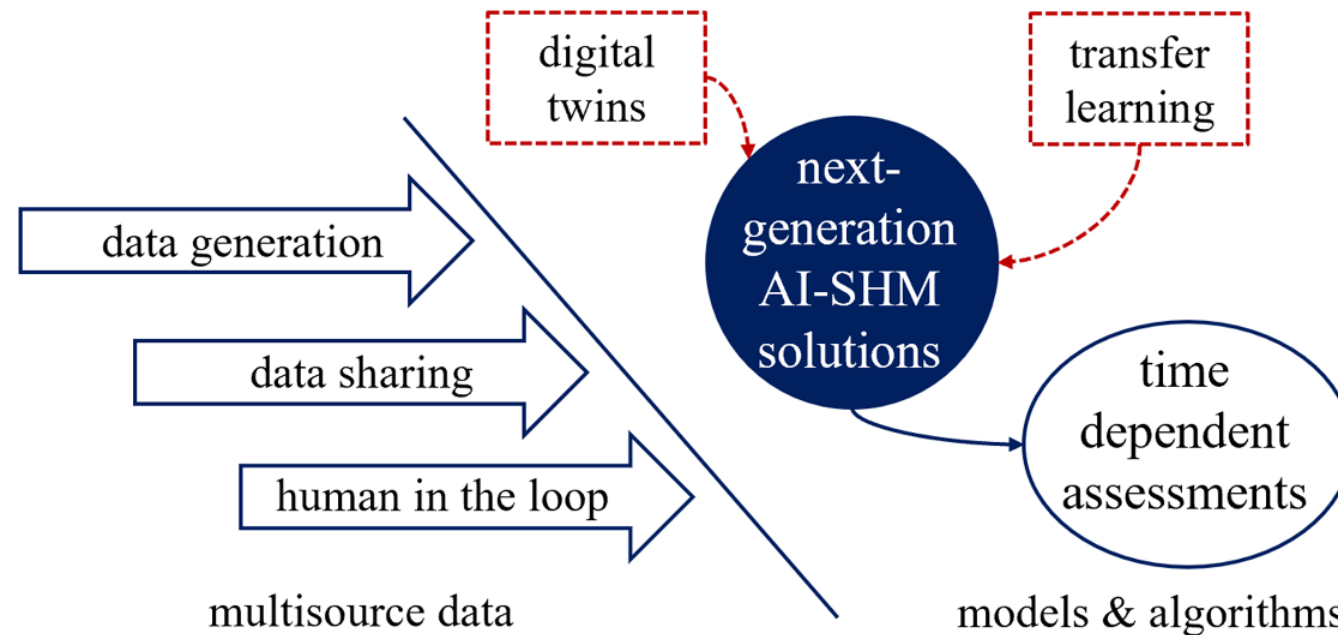
# Why this paper / why now

- AI + SHM is moving from research demos toward deployable decision-support systems.



# Core roadmap message

- The paper emphasizes system-level AI-SHM integration across software, data, hardware, trust, and field deployment.



# Pain points to organize around

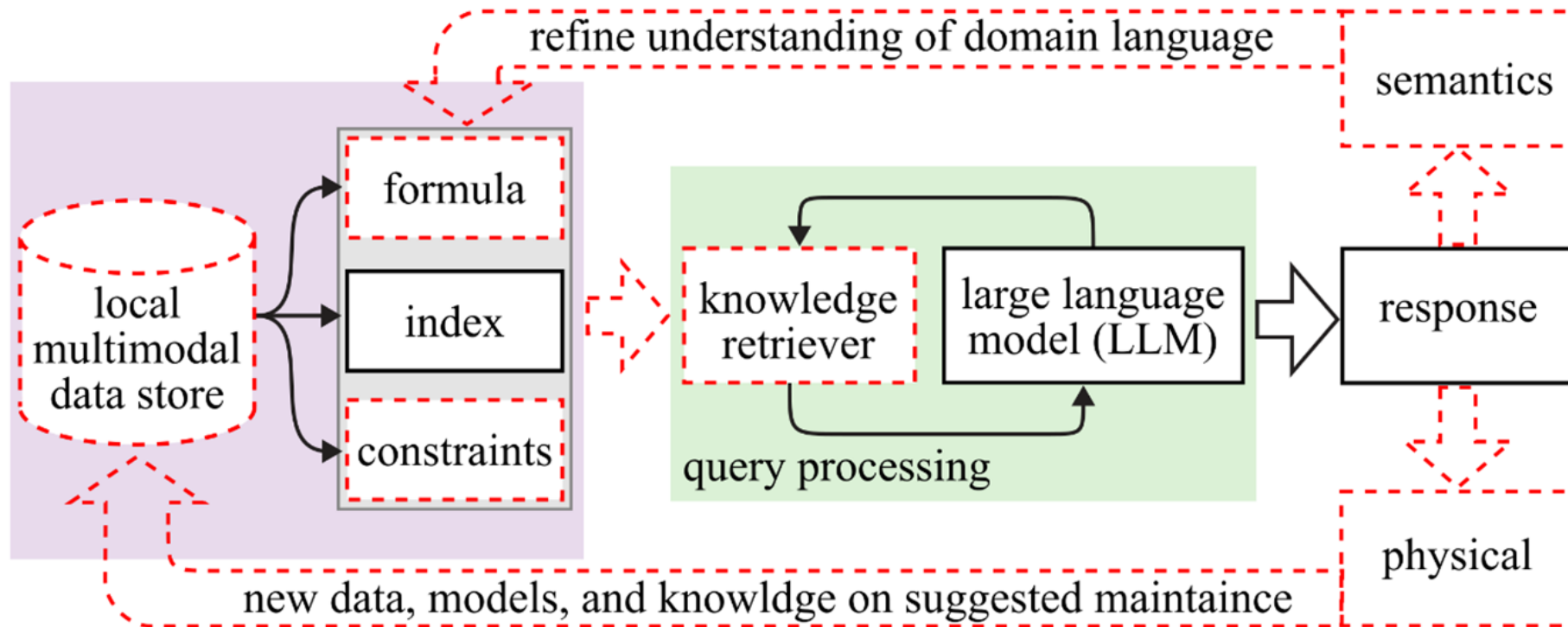
- data scarcity
- labeled damage data
- uncertainty
- interpretability
- cybersecurity
- certification
- operator trust

Maintenance scenario  $M_2$



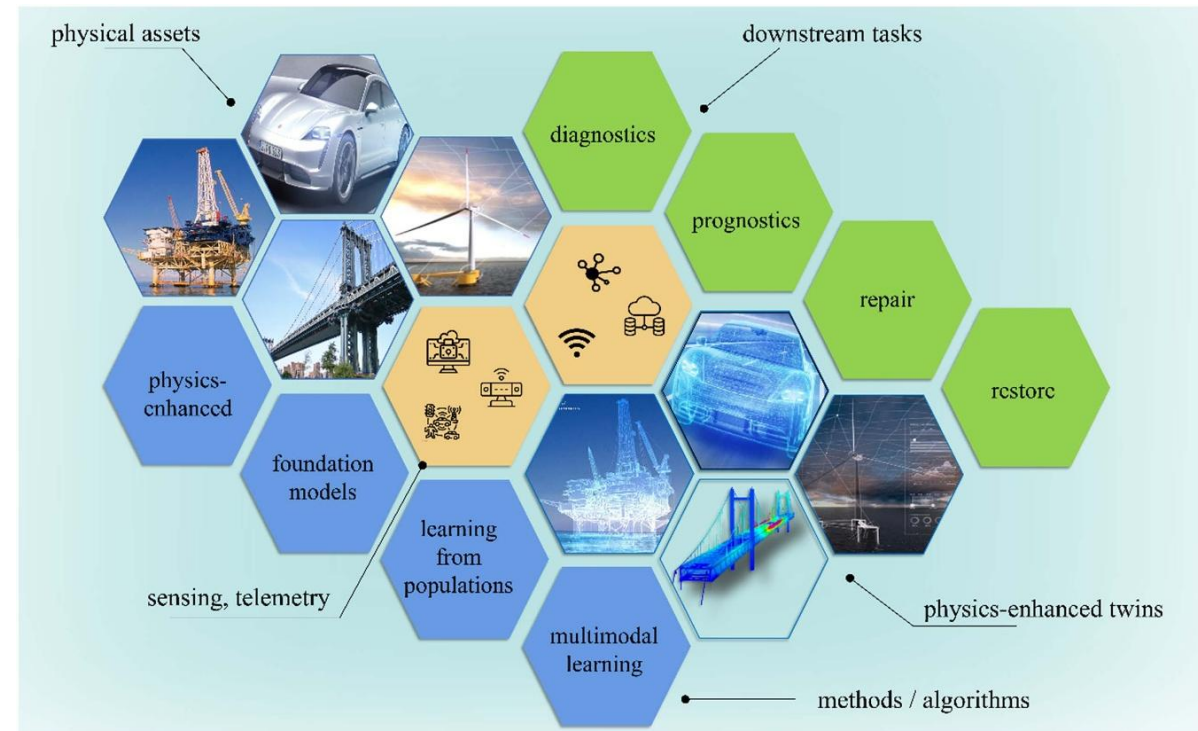
# Opportunity areas for us

- Digital twins, RAG/LLM decision support, physics-informed ML, adaptive sensing, transfer learning, fleet-level monitoring.



# Candidate project concepts

- RAG-enabled SHM assistant
- Digital twin + AI damage assessment workflow
- Trustworthy AI-SHM framework
- Adaptive sensor placement / active learning
- Fleet-level transfer learning demo



# What could the community prototype quickly?

- A small demo linking reports + sensor data + model outputs into a grounded AI assistant.



# Discussion Questions: What Would Actually Move the Needle?

1. What sponsor decision would this help us make faster, cheaper, or with more confidence?
2. What data, models, reports, or sensor outputs do we already have that could support a prototype?
3. What could we demonstrate in 3–6 months that is more than a paper or concept slide?
4. What would an engineer, maintainer, or program manager need to see before they would trust and use it?

# Thank You for Your Time

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