Generative AI for the aviation and maintenance sectors

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Teknologi for et bedre samfunn

Generative AI for the aviation and maintenance sectors

- Capabilities
  - Program generation
  - Real-time monitoring
- Cross industrial

- High impact uses cases
  - Underwater Image synthesis
  - Depth estimation
- Low hanging fruit

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Airport Apron Monitoring with Generative AI

Manual updates for new procedures possible

Procedure manual (e.g., IGOM)

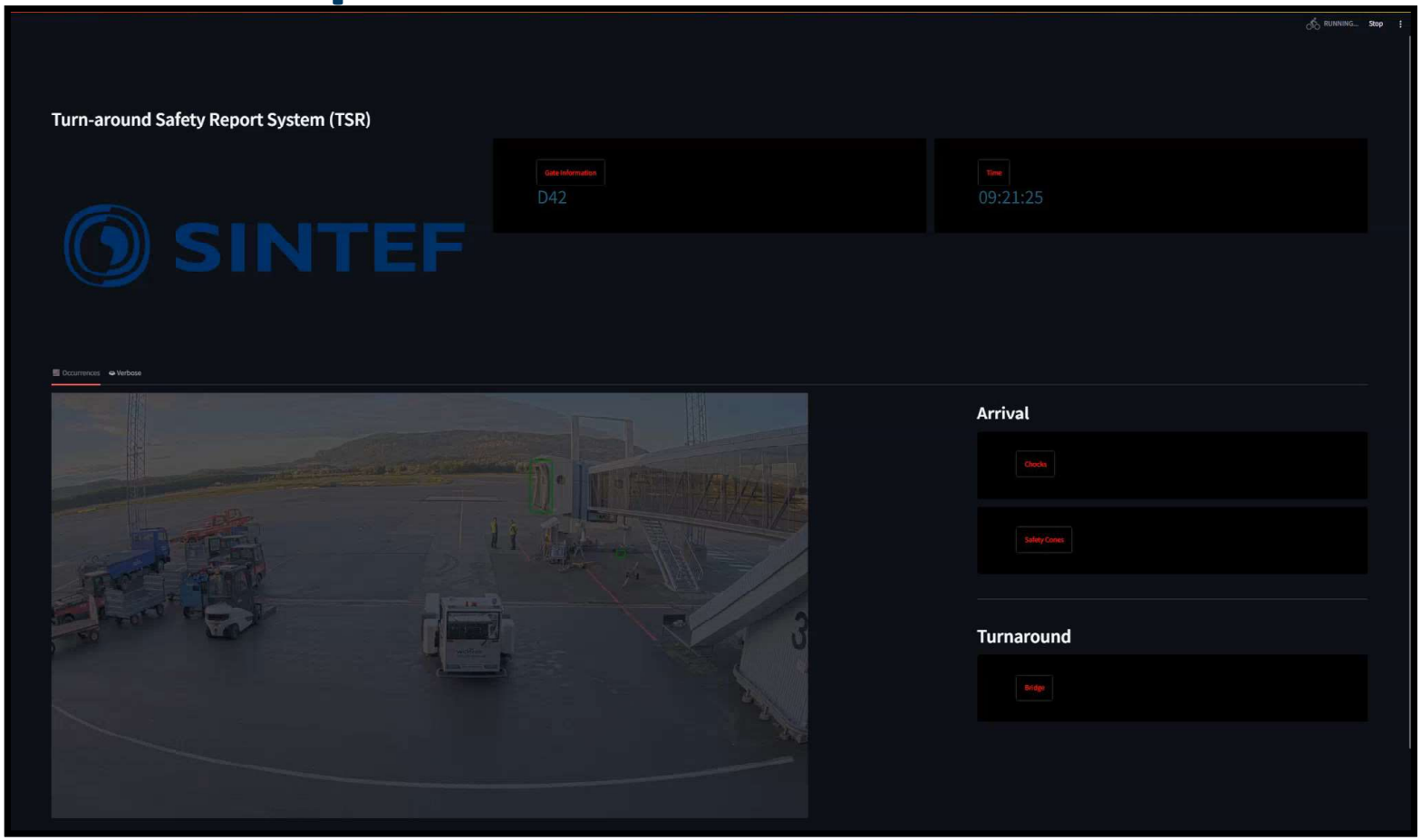
Human-facilitated automatic processing

Verified "RULES" generated as structured descriptions

Automatic processing

Verified PROGRAM CODE for checking "rules" in real-time

Sample result



Take away message

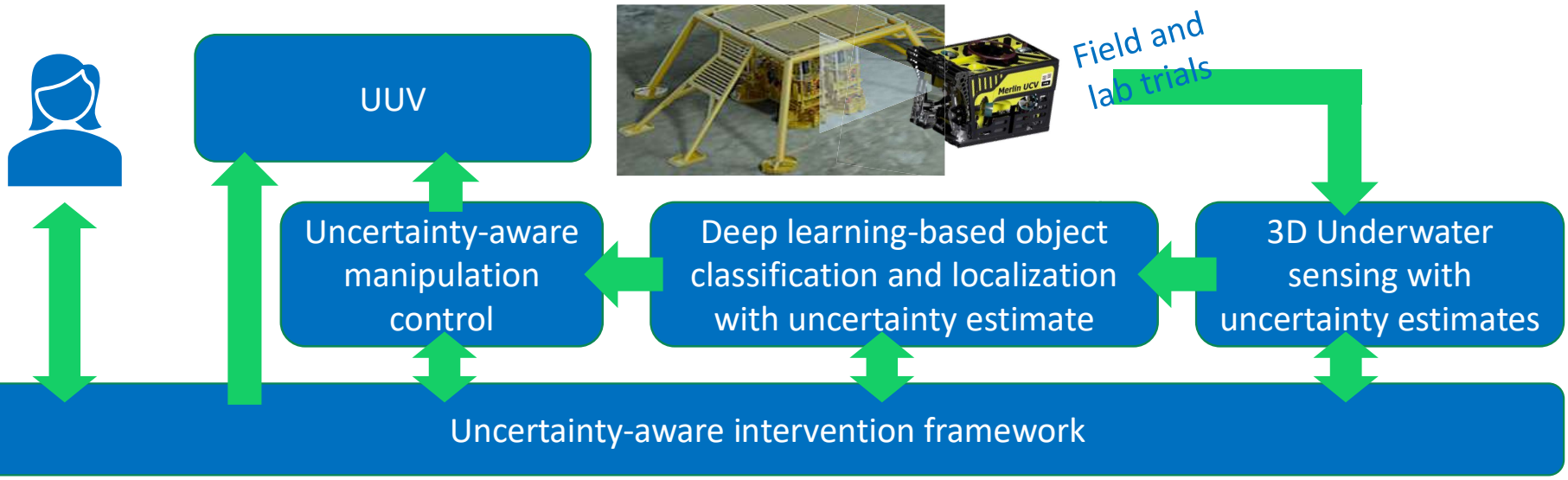
Pros:

- Reduced requirement on labelling video
- Better explainability

Cons/Challenges:

- How to validate such system ? e.g. Simulated scenarios? Human in the loop
- Human-AI teaming: Access to LLM ? Validation? Feedback? Visually explainable human in the loop?
- Object Detection module drift

Use Case 2: Underwater Image Generation for 6D Pose Estimation in Maintenance



https://www.sintef.no/en/projects/2023/safesub_en/

Need lots of data! SIMULATION

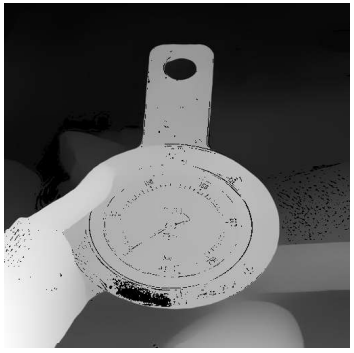
Clear water

Turbid water

?

?

Generated examples



Increase water turbidity

CoT deep learning based depth estimation from image

Take away message

- Validation of intensity and depth image. e.g. forward and backscatter
- Diversify the Underwater Scenes e.g. Different marine life
- Data uncertainty modelling

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