DigitalWorld 2023 & NexComm 2023

Theme

Cohabitation of Humanized AI and Humans for Critical Systems Resilience

PANEL: AI Hour!

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Passing the torch of Control both senses; one of the major dilemma
Threshold of passing the responsibility.

On human decisions: stress, common sense; Human panic, Hesitation to act, Emotions

Avalanche of alarms; correlation is needed, to have only one 'representative' situations

Legal implications, liability

An 'apriori recognizable threshold to act' and routine control

Security issues; human as intruder
Good/trustees: only skilled /certified decision humans
Preparedness: situational training

CONTRIBUTORS

Moderator

Prof. Dr. Lasse Berntzen, University of South-Eastern Norway, Norway

Panelists

Prof. Dr. Oliver Michler, TU-Dresden, Germany

Nadine-Christine Wessel, Technische Hochschule Brandenburg, Germany

Prof. Dr. Petre Dini, IARIA USA/EU

Chair Position

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- Discussing key issues and challenges that may arise when integrating AI and human decision-making systems
- When to use AI?
  - Sometimes AI can handle simple tasks to offload human work, but AI may be biased
    - AI may also cause deskilling
    - Example: Recruiting
  - At other times AI can intervene to reduce or avoid errors made by humans (stress, panic, emotions)
    - Example: Collision avoidance

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- There are also legal and liability considerations associated with integrating AI and human decision-making, particularly in critical systems where the consequences of errors or failures can be significant
- Also, ethical considerations
  - Autonomous cars and critical decisions

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- In addition, there are security concerns to consider when integrating AI and human decision-making, as there may be risks associated with human intruders or other threats
- This may require limiting decision-making authority to only skilled and certified individuals and providing situational training to ensure preparedness for potential scenarios

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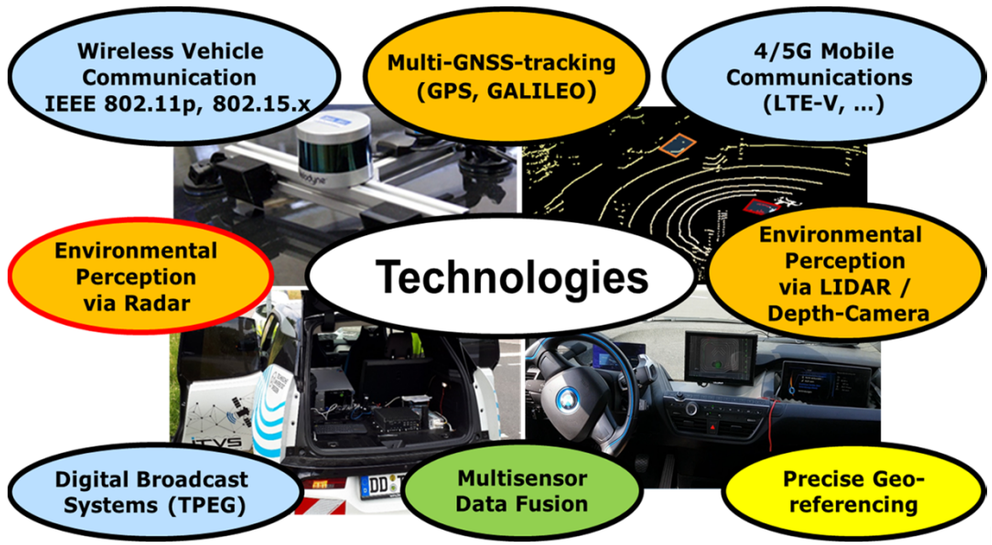
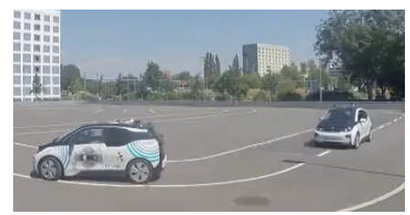
Autonomous driving and Critical system structures with AI - Coexistence and Synergy in technological-algorithmic Processes

- **Technological aspects …**
- **Challenges of AI …**
  - AI advantages: simple, fast, robust for learned processes, energy efficient
  - AI disadvantages: no determinism, reproducibility, open-ended for untrained scenarios
- **Synergetic role of AI …**
  - Integrety: AI as underlaying system as well as human knowledge overlaying safeguarding enveloping system
- **Legal implications, liability for accidents …**
  - Question of responsibility (manufacturer, OEM, SW code)
  - Decision basis (self-protection, material damage, personal damage)

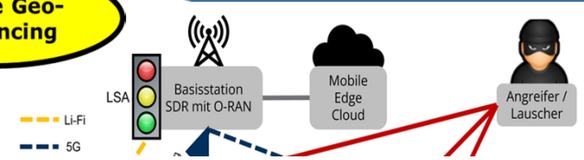


Human (Det/Stat) - based Knowledge
(Securing, Confidentiality, Integrity)

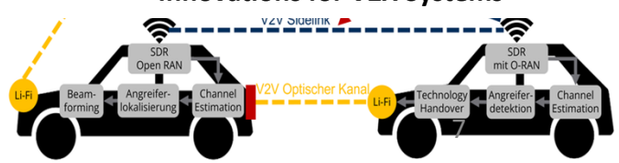
AI/ML – based Knowledge
(State detection, Controls, …)



https://www.youtube.com/watch?app=desktop&v=2kgUBZe4E5c



Project PHYSICS – Physical Layer Security Innovations for V2X Systems



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On the Unintended Consequences of the Interactions between Humans and Intelligent Decision Support Aids: Managing the Threat of Decisional Deskilling

Nadine-Christine Wessel

- Deploying (partially) intelligent Decision-Support Systems (iDSS) in the workplace can lead to **unintended organizational consequences**
  - Employee-related: loss of critical thinking, knowledge (both declarative and procedural), expertise
  - IT-Compliance: misuse of systems. system circumvention
- Interacting factors can shape deskilling effects
  - Individual factors: users' knowledge and skills, attitudes, and motivations toward using iDSS.
  - Technical factors: design and functionality -> ease of use, availability of relevant information
  - Organizational factors: policies & procedures governing the use of iDSS, level of support provided to users
- **Decisional Deskilling may remain hidden until iDSSs are disrupted or discontinued**, even though it can occur on a latent level
- Contributing factors include the degree to which iDSSs take over decision making activities, dependence on iDSS (reliance), and time spent with iDSS (?)
- Mitigation practices for Decisional Deskilling include training and support programs, monitoring employee reliance, **increasing participation in human decision making**, and re-evaluating iDSSs effectiveness.

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- **Assisting: Decision paradigm change**
  AI and the Human brain need to be used in conjunction; one is not to replace the others; *bias* and *trade-offs* must be cleared by humans.
  Human + AI based decisions need *personalized H-AI context-based training*.
  The feedback loop must be updated based in *success-index* of cooperation (see Intelligent Tutorial Systems).
  Revisit: Replace - Assist - Advice | Feedback-by-request, Suggestions-by-predictions
  Validation: Validate synchronization duration | Validate use case scenarios
  Flow: AI (Personalized-AI) & in-Context (Human skills) -->> Assisted decisions

- **Personalized AI for critical system resilience**
  Metaverse is training the AI with virtual models;
  Simulations accelerate the system deployments but no real-world environments.
  Latency, reliability, synchronization (for collaborative work)

  Digital-twin approach can be used for a dry-training AI-Humans for specific tasks
  Decision prediction and *feedback as options*.
  Updated training and *real-time impact feedback*.

OPEN DISCUSSION

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Output highlights

- The decisions should be taken by humans; AI only assists.
- Feedback Human-AI must be bidirectional; no AI decision should be enforced by an AI entity
- Evaluation of easy/hard decisions (when time-related situation, AI-based tools might excel; in some situations, AI- is even better than a human, question of human skills and training)
- AI-based training (for skills updates; e.g., avionics)
- Great risk of deskilling by ‘lose responsibility’ or lack of responsible decisional actions
- Legal responsibilities should be well-defined (e.g., failed sensors might trigger wrong decisions when on ‘automatic control)
- The risks need to be controlled by special certifications and role definitions