

# Work Force Considerations in Automation

## Human Factors

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# Human Factors in Automation



How do human capabilities, limitations, and characteristics affect interactions with automation systems?

# Human Factors in Automation

How do we mitigate known challenges in human-automation interactions?

- Over/Under Trust
- Skill Deterioration & Poor Recovery
- Detection Failure
- Loss of Situational Awareness



**See Notes for References:**

Aldelstein, et al., 2006

Bainbridge, 1983

Foroughi et al. 2023

Loft, et al. 2023.

Heatherly, Baker, Canfield, 2023

Parasuraman & Riley, 1997

Skitka, Mosier, & Burdick, 1999

# Human Factors in Automation

## Mitigation...

*Research suggests excellent hiring and top-notch training cannot fully overcome poor HF design.*

### See Notes for References:

Adelstein, et al., 2006

Bainbridge, 1983

Holden, 2009

Norman, D. 2013

Wickens, et al., 2004

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## Mitigation...Ask an SME

- Many Existing HF design principles related to automation.
- Task fit, transparency, alerting, adaptiveness, skill practice, displays, etc.



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## Mitigation...Partner to Conduct HF Research

- Systematic,
- Human-centered,
- Upstream,
- Context-based.



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## Positive Outcomes of HF Design

- Improve safety
- Minimize errors
- Reduce learning time
- Reduce after-market work-arounds
- Increase user trust & buy-in

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