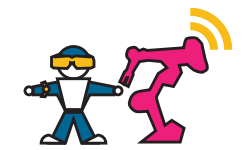


WEKIT Framework

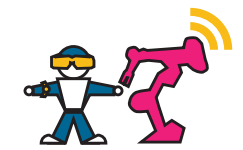
Task 1.3

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Bottom-up approach



Task classification scheme

Attributes:

- what are the most common attributes describing this task?
- Mastery condition:
- what are requirements to be fulfilled for successful task execution?

Options:

- which additional options may complicate the task?

Learning difficulties:

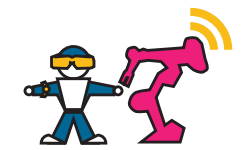
- what are aspects, which makes it hard for novices to learn this task from an expert?

Teaching means:

- what are „traditional“ means of teaching, that an expert teacher would use to teach these tasks?

AR/WT assumptions:

- which AR/WT means could possibly support the learning of this kind of tasks?



Task classification example: Decision Taking

Attributes:

- analytical task, which leads to a diagnostic/ analytical decision. The task needs to take available information into account and needs to actively retrieve additional information

Mastery condition:

- needs to recognise the relevant information and draw concluding decision, improved situational awareness

Learning difficulties:

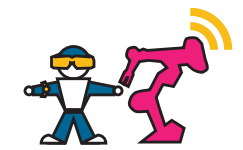
- for a novice it is often hard to see, which information an expert takes into account and why. Also, drawing the right conclusion with available information is hard

Teaching means:

- explanation/think aloud: the expert explains every step, which available information leads to which additional check for additional information, which information is relevant to draw which conclusion
- simplified training models: stepwise the complexity of decisions can be increased by starting with simplified models and working towards complex situations

AR/WT assumptions:

- think aloud protocols
- object enrichment



Transfer mechanism classification scheme

Attributes

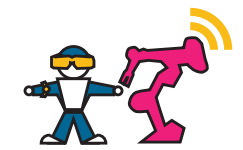
- how can the feature be described?

Requirements for recording

- how is this mechanism enabled during recording?
- which conditions need to be met to enable this feature?
- which functionalities does the feature have to offer?

Requirements for replay/re-enactment

- how is this feature enabled by/for the learner?
- what does this feature do?
- which conditions need to be met to allow this feature to be present?
- which interaction means does the learner have?



Transfer mechanism classification example: Object enrichment

Attributes

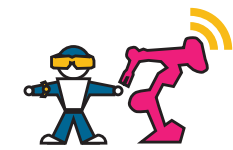
- display of recognized objects with additional information

Requirements for recording

- object recognition features enabled
- modelling of additional information for recognized objects

Requirements for replay/re-enactment

- objects recognized during novice task execution need to be enriched in the same way
- interaction elements are automatically displayed to switch object recognition on/off or to interact with specific elements

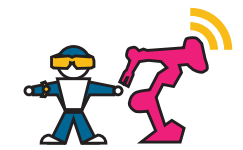


Mapping Tasks and Mechanisms

Transfer mechanism	Task Classifications									
	High precision	High speed	Decision taking	Collaborative tasks	High memory load	Perceptual task	Assertive task	Dual task Performance	Managing Uncertainty	High Spatial Task
Slow motion										
Zoom				3	13					
Think aloud protocol	1		8							
Object enrichment	2									
Contextualisation	3, 9			3						
Self awareness of physical state						14				
Directed focus						15				
Case identification						16				
Spatial Simulation										18
In Situ Realtime Feedback	4					17				
Mobile control										
Virtual Post its					5		5			
Haptic hints	5, 12									
Virtual/Tangible Manipulation	6		10, 11, 3							
Remote symmetrical tele-assistance	7	7								

Literature

- 1 Schraagen, 1993
- 2 Tang et al. 2003
- 3 Quarles et. al. (2008)
- 4 BMW augmented reality system (Interone Worldwide, 2010)
- 5 Sabine et al, 2011
- 6 Lahanas V et. al. (2014)
- 7 Chinthammit et. al. 2014
- 8 Lundgrén-Laine et al, 2010
- 9 Curtis et al. 1998
- 10 Seichter, H., 2004
- 11 Wang, Chen, Gong, & Hsieh, 2007
- 12 Khademi et al. 2012
- 13 Mulloni, Dünser, and Schmalstieg (2010)
- 14 larkin (1983)
- 15 Jarodzka et al, 2013
- 16 Mulzoff, 1990
- 17 Kotranza, Lind, Pugh, and Lok (2009) used
- 18 Martin-Gutierrez et al. (2010)



Q & A

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