MedEye
Role of Expertise in Perceiving Dynamic Medical Images

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Theories & research findings
THEORETICAL PART OF THE MEDEYE PROJECT

Summary on cognitive processes involved in medical diagnosis and intervention (Jarodzka, Boshuizen, & Kirschner, submitted)

Analysis of perceptual skills in dynamic images

- ... in classifying biological locomotion patterns.
  (Jarodzka, Scholte, Gerrets, & Vancampenhout (2009) Learning and instruction)

- ... in diagnosing epileptic seizures in infants.
  (Balk, van der Meij, Kers, De Grave, Mergen, & van Merriënboer, 2000; European Journal of Neuroscience)

- ... in controlling air traffic.
  (van Mierwegen, Jarodzka, Brand-Gruwel, van Merriënboer, De Bok, & Kirschner, 2009)

- ... in diagnosing based on PET/CT
  (Jarodzka, Lehmann, & Säljö, 2008)

Characteristics of Visual Expertise

- Perceptual skills required for dynamic stimuli
  - efficient visually search within (equally) salient relevant and irrelevant elements and detection of relevant elements
  - correct interpretation of (the motion of) these elements

- Knowledge- and experience-based shortcuts (fish only)
  - increase with expertise & enable a fast and correct reaction
  - found in verbal and in eye tracking data
  - strategies become more diverse with increasing expertise (as measured by string-editing Levenshtein method of scarpahol) € may be different for the other tools
Conclusions from pilot study

• Results show that it is easier to detect present general movement than detect the absence of it (i.e., true positive > true negative)
• Further analyses revealed that this result is not due to the visual search of the motion, but rather on its interpretation and evaluation.

For more questions on this talk, please contact me:

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