Omnidirectional Cinemagraphs for Safety Training

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Motivation

Safety critical to workplace

- Occupational Health and Safety Act 1970
- Significant resources spent on training employees and inspectors
- Problem: Hazards training puts trainee at risk
Motivating Application

Construction Safety: Training worker to identify hazards

Objects on Ground Level

- Working near vehicle without traffic barricades
- Highly visible reflective vest
- Use extreme caution when approaching heavy equipment
- Clearly marked traffic work zones with signage warnings
- Use physical barriers to protect workers from vehicle traffic
- Audible back-up alarms
- Spotter or flagger to direct operator/traffic if restricted visibility
- Adequate clearance behind vehicles

Recognize Any Hazard(s)?
Motivating Application

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Highway construction worker needs to wear high visibility reflective clothing to help prevent struck-by hazard from moving heavy equipment.
Motivating Application

Virtual reality for construction safety: Keep trainee safe, immersed, engaged
Motivating Application

Omnidirectional cinemagraphs provide photorealistic detail, attention guidance
Case Study: In Home Fire Hazards
Motion as a Cue for Attention Guidance
Case Study: In Home Fire Hazards

Motion as a Cue for Attention Guidance
Case Study: In Home Fire Hazards

Motion as a Cue for Attention Guidance

- Between subjects experiment:
  - Condition Dynamic (cinemagraph) / Condition Static (one frame of video)
  - Participant asked to identify all the fire hazards in the scene
  - Survey items related to presence, immersion, cognitive absorption, attitude/preference
  - 10 participants
  - Oculus DK2 with integrated eye tracker

Case Study: Findings

Participants identified more hazards in Condition Dynamic

Participants rate Condition Dynamic higher on presence, absorption and attitudes
Case Study: Findings

Participants fixated on candle and paper towel faster in Condition Dynamic
Takeaways

- Omnidirectional cinemagraphs: Easy to record, hard to edit
- Domain experts need to author
- Both training and safety are about attention management

Thank you