

Herbert Wertheim College of Engineering UNIVERSITY of FLORIDA

PONISING THE NEW ENGINEER TO TRANSFORM THE FUTURE

COMPUTER AND INFORMATION SCIENCE AND ENGINEERING

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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Motivating Application

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



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Motivating Application

Omnidirectional cinemagraphs provide photorealistic detail, attention guidance



Case Study: In Home Fire Hazards

Motion as a Cue for Attention Guidance



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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/preference¹
 - 10 participants
 - Oculus DK2 with integrated eye tracker

¹ [Kalyanaraman & Sundar 2006, Vorderer et al. 2015, Green & Brock 2000, Kim & Biocca 1997, Agarwal & Karahanna 2000]

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Case Study: Findings

Participants identified more hazards in Condition Dynamic



Participants rate Condition Dynamic higher on presence, absorption and attitudes

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Case Study: Findings

Participants fixated on candle and paper towel faster in Condition Dynamic



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Takeaways

Omnidirectional cinemagraphs: Easy to record, hard to edit

Domain experts need to author



Thank you

Both training and safety are about attention management

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