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University of Dayton

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The University of Dayton Greg and Annie Stevens Intelligent Infrastructure Engineering Lab was instrumental in securing an $850,000 National Science Foundation grant to create worksite-specific safety training for workers in high-risk industries.

According to the U.S. Bureau of Labor Statistics, in 2021, nearly 1 in 5 workplace deaths occurred in the construction industry. Just over one-third of construction deaths were due to falls, slips and trips.

"In high-risk workplaces, such as construction sites, inattention to workplace hazards is a common factor in serious injuries and fatalities. Evidence strongly suggests adults learn best in the context of their work environments and real-life situations. This suggests making safety training more closely associated with trainees' work environments may be more effective than current classroom-based training methods," said Namgyun Kim, a University of Dayton assistant professor of civil and environmental engineering and engineering mechanics leading the project. "This project will lead to better occupational safety training practices in high-risk industries."

This current project will be organized into two phases. First, the project will create training environments where trainees experience potential accidents. During the second phase, the team will assess trainees' abilities to recognize hazards and monitor workers' physical behaviors near workplace hazards.

"The virtual and augmented reality capabilities of the lab will allow us to perform pilot tests before the developed training environment is deployed in real world workplaces," said Kim, whose research incorporates learning science, cognitive psychology, virtual and augmented reality and computer science to enhance construction safety and health management.

Vijayan Asari, director of the UD School of Engineering's Vision Lab who researches artificial intelligence, and JungHo Jeon, an assistant professor and departmental colleague of Kim's who specializes in cognitive responses to construction hazards, are assisting Kim on the project.

Researchers from Texas A&M University and the University of Nevada, Las Vegas also are involved in the project. They will share approximately $300,000 of the total award.

For more information on the project, visit the project's NSF page or contact Kim at nkim01@udayton.edu.

For interviews, contact Shawn Robinson, associate director of news and communications, at srobinson1@udayton.edu.