

UTC Project Information	
Project Title	MPC-653 – Optimize the Work Zone Safety with Spatial Information Technology and Eye Tracker
University	University of Wyoming
Principal Investigator	Chengyi Zhang, Ph.D., P.E.
PI Contact Information	Assistant Professor Dept. of Civil and Architectural Engineering University of Wyoming Phone: (307) 766-4232 Email: chengyi.zhang@uwyo.edu ORCID: 0000-0002-9190-2282
Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT, Office of the Assistant Secretary for Research and Technology \$45,986 University of Wyoming \$47,373
Total Project Cost	\$93,359
Agency ID or Contract Number	69A3551747108
Start and End Dates	May 7, 2021 to July 31, 2022
Brief Description of Research Project	Construction in the United States has consistently experienced higher fatality and injury/illness rates. While many studies have highlighted the importance of attention in reducing the number of injuries in the construction industry, few have attempted to measure the actual effectiveness of vibrant markers on hazard identification. The objective of the proposed research aims to integrate remote sensing with Eye Tracker to analyze and quantify the effectiveness of construction safety signs. This research will also propose a new mechanism to optimize the layout of the construction safety sign based on the GPS and point cloud data. Phase one of the study will be conducted in the laboratory condition to determine how well the warning labels improve the speed and accuracy in which construction workers are able to locate and identify hazards. Phase two will be conducted in the real construction environment. Eye-tracking will be performed and be integrated with remote sensing to perform a safety simulation and to optimize the layout of the construction safety sign. This research increases the construction field's understanding of the variables that impact attentional allocation and provide a novel approach for improving construction site safety by using Eye-tracking technologies and remote sensing.
Describe Implementation of Research Outcomes (or why not implemented)	Part of the research outcomes has been submitted to "Automation in Construction" for review. The researchers are working on the second manuscript to be submitted in near future.
Place Any Photos Here	

Impacts/Benefits of Implementation (actual, not anticipated)	<ol style="list-style-type: none">1. Defined the factors that can influence workers' hazard recognition performance.2. Investigate how brief safety training impacts workers' visual search strategy.
Web Links <ul style="list-style-type: none">• Reports• Project Website	<ul style="list-style-type: none">• MPC Research Report – Optimize Work Zone Safety with Spatial Information Technology and Eye Tracker