

Hazard Recognition Scenario Builder for On-Site Customizable Virtual Training



Authors

John Moreland (left), Senior Research Scientist, Center for Innovation Through Visualization and Simulation, Purdue University Northwest, Hammond, Ind., USA
morelanj@pnw.edu

Kyle Toth (right), Senior Research Engineer, Center for Innovation Through Visualization and Simulation, Purdue University Northwest, Hammond, Ind., USA
katoth@pnw.edu

Monika Subhash Singh, Graduate Student, Purdue University Northwest, Hammond, Ind., USA

Sai Laya Mallineni, Graduate Student, Purdue University Northwest, Hammond, Ind., USA

Xibin Zhou, Graduate Student, Purdue University Northwest, Hammond, Ind., USA

Ruiyu Yang, Undergraduate Student, Purdue University Northwest, Hammond, Ind., USA

Yuezhang Chu, Undergraduate Student, Purdue University Northwest, Hammond, Ind., USA

This project has developed a software system that enables steel manufacturers to rapidly develop and deploy site-specific virtual hazard recognition training. The system takes advantage of innovative digital technology to create an immersive, virtual reality training experience. The tool allows steel mill personnel to construct their own safety scenarios based on their specific environment, using their own 360° videos, images, text and video content. This provides a training experience that directly mirrors real-world conditions, enhancing the effectiveness of hazard recognition and response training. The team's industry mentor facilitated multiple rounds of input and feedback with steel mill personnel to improve the system's capabilities, usability and deployability, addressing practical issues along the way. This process has resulted in multiple iterations of the software being tested by industry personnel and led to technically robust software that is now being prepared for wider rollout within the steel industry.

Project Goals

1. Develop the Hazard Recognition Scenario Builder for On-Site Customizable Virtual Training, a tool that allows steel industry personnel to create immersive, custom training scenarios based on their specific worksite hazards.
2. Enhance training effectiveness by enabling users to create virtual scenarios that closely mirror real-world conditions specific to their worksite.
3. Promote digital transformation in the steel industry through integration of advanced digital technologies into daily operations.
4. Engage and train students to develop and utilize the underlying technologies of the system while exposing them to potential careers in the steel industry.

Project Details

The project's core outcome was the successful development of the Hazard Recognition Scenario Builder software system with a core focus of simplifying the use of advanced digital technologies to provide custom training scenarios. The development team included five Purdue University Northwest students (three graduate students and two undergraduates), with input and feedback from three steel mills. U. S. Steel – Gary Works served as the project's industry mentor and provided core input and feedback on functionality, usability, and requirements for implementation and rollout. Additionally, Steel Dynamics Inc. – Flat Roll Group Butler Division and Stelco Inc.'s Hamilton Works tested and provided feedback and suggestions for the project.

The project enhances training effectiveness through the use of 360° video captured on-site to provide accurate real-world worksite conditions during training, compared with general hazard recognition training. The project supported integration of advanced digital technologies into daily operations by normalizing the

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