

# The applications of computer vision in workplace safety

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**Abstract:** Measurement of body posture and movement is essential for analyzing the risk of occupational injury. In a laboratory, such measurements are usually obtained using a motion capture system. Due to the setup complexity and space requirement, using a motion capture system in field studies can be challenging. In this talk, we will demonstrate how to use portable sensors (e.g., depth sensors and regular cameras) to acquire body motion and to perform biomechanical analysis for different occupational tasks. The talk will start from the validation of depth sensor-based joint location. Once the accuracy of the joint location is evaluated, the efficacy of using a depth sensor to monitor gait parameters during walking will be explained. The talk will also cover some recent studies where computer vision algorithms are integrated with RULA for analyzing the whole body biomechanical exposures during lifting tasks.

**Bio:** Dr. Xu received his MS and PhD degrees from North Carolina State University before moving on to a postdoctoral research fellowship in the School of Public Health at Harvard University. From there he became a research scientist at Liberty Mutual Research Institute for Safety. He joined the faculty of NCSU in 2016 to pursue his research interests in the areas of biomechanical modeling, optimization, simulation, and data mining with respect to human daily activities to promote workplace and at-home injury prevention and driving safety. Xu has published more than fifty journal articles on the aforementioned research topics.