Occupational Safety and Health in the Wake of Drones

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Abstract : The body of research examining the integration of drones into various industries is expanding rapidly. Despite progress made in addressing the cybersecurity concerns for commercial drones, knowledge deficits remain in determining potential occupational hazards and risks of drone use to employees' well-being and health in the workplace. This creates difficulty in identifying key approaches to risk mitigation strategies and thus reflects the need for raising awareness among employers, safety professionals, and policymakers about workplace drone-related accidents. The purpose of this study is to investigate the prevalence of and possible risk factors for drone-related mishaps by comparing the application of drones in construction with manufacturing industries. The chief reason for considering these specific sectors is to ascertain whether there exists any significant difference between indoor and outdoor flights since most construction sites use drones outside and vice versa. Therefore, the current research seeks to examine the causes and patterns of workplace drone-related mishaps and suggest possible ergonomic interventions through data collection. Potential ergonomic practices to mitigate hazards associated with flying drones could include providing operators with professional pieces of training, conducting a risk analysis, and promoting the use of personal protective equipment. For the purpose of data analysis, two data mining techniques, the random forest and association rule mining algorithms, will be performed to find meaningful associations and trends in data as well as influential features that have an impact on the occurrence of drone-related accidents in construction and manufacturing sectors. In addition, Spearman's correlation and chi-square tests will be used to measure the possible correlation between different variables. Indeed, by recognizing risks and hazards, occupational safety stakeholders will be able to pursue data-driven and evidence-based policy change with the aim of reducing drone mishaps, increasing productivity, creating a safer work environment, and extending human performance in safe and fulfilling ways. This research study was supported by the National Institute for Occupational Safety and Health through the Pilot Research Project Training Program of the University of Cincinnati Education and Research Center Grant #T42OH008432.

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