Risks and Hazards Associated with Unmanned Aerial Vehicle Flights in Construction

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Unmanned Aerial Vehicles (UAVs), also called drones, are useful robotic agents that have been widely used on construction job sites for variety of purposes in different stages of project including monitoring, visualization, inspection and documentation of construction activities, processes, products, and structures. UAVs are new and a rapidly evolving technology in construction domain and recently their applications on jobsites has increased significantly. Although using UAVs have brought several advantages to the construction industry, there are some safety risks and hazards associated with their use on construction job sites. Interestingly, the older the UAV platforms get, they will be more prone to mechanical failure risks, which is a major cause of UAV failure. Also human error in UAV flights is another safety concern that potentially can cause a crash and put construction personnel safety in jeopardy. In this poster a risk model is presented to quantify the risk of flying UAVs over construction jobsites. This risk is also compared to the risk of general aviation industry flights over dense areas, like construction jobsites.

Moreover, this poster shows the anatomy of UAV failed flights in construction. In order to study the anatomy of failed UAV flights, firstly anatomy of failed UAV flights in general is studied. Then an adopted model of anatomy of failed UAV flights in construction is developed. Lastly, by reviewing the anatomy of failed UAV flights in construction, a series of potential hazards of UAV flights, which might threaten safety of construction personnel, product and machinery, are proposed.

Keywords: Unmanned Aerial Vehicles, UAV Crash, UAV Accident, UAV Safety, Construction Safety