Lebanese American University

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Capstone Design Project 2

Cover Letter

COE – 595 / MCE – 591

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“Ensuring a safe and hygienic environment within hospitals is critical to patient care and infection control.” This belief is incorporated in our project, which focuses finding a solution to decrease human intervention to contagious and dangerous areas in hospitals. Room sanitizing and delivery work are of the most common daily tasks hospital staff are subjected to. However, doing this work in rooms where there are high chances of disease spread puts them under danger. Therefore, we aim to solve this issue by creating an autonomous robot that navigates through the hospital handling those simple, yet essential, daily tasks.

The robot designed and implemented acquires various features including autonomous mapping and navigation techniques inside a static hospital environment. The robot is assigned one task, delivering items or sanitizing a room. In the case of delivery, the robot follows the appropriate path to reach the destination successfully. On the other side, in the case of sanitization, the robot reaches the room it should sanitize successfully, disinfects the area using UV-C LEDs, and decides whether additional cleaning methods are necessary or not based on a computer vision model.