OLP-Design and development of wall sticking drone

Abstract:

Integrating technologies from the field of robotics, sensing, and, process control will be a decisive step in the digitalization of the construction industry. The traditional vertical structures inspection system uses rope access, scaffolds, telescopic elevation platforms supported by cranes, and manned helicopters. The challenges faced by conventional techniques are as:

- Construction of scaffolding,
- Sending inspectors into dangerous and fatal environments,
- Shutdown of construction operations etc.

Generally, these solutions can be

- Risk to life,
- Labor-intensive,
- Time-consuming, and
- Financial burden to the construction industry.

In recent years, wall-sticking drones (WSD) or wall-climbing drone (WCD) technology has drawn constant attention in the field of civil engineering and robotics society due to its numerous possible applications. The tendency of utilizing WSD can grow every day in different tasks such as inspection, maintenance, and repair (IMR) of high-rise structures, screening of overhead tanks, and damage observation of different structures like tall structures, ships, and planes. This can be effectively implemented during fire disasters and on-site reconnaissance. Therefore, many studies

have been conducted over years to examine the potential of drones to be perched autonomously on the vertical/inclined wall.