

ABSTRACT

In current swarm systems, quadcopters are commonly used as flight platforms. However they are unable to be effective platforms due to the lack of swarm optimized features like compact design and enclosed moving parts for close interaction in swarm systems. We propose a solution in the form of a hardware and software optimized swarm platform. By designing a unique frame which encloses the electronics and increases durability and resistance to mid-air collisions, we managed to make a hardware optimized swarm platform. Furthermore, by implementing a mesh network and pooled computing, we managed to also optimize the software of the platform. Results indicate that the optimization greatly helps to improve performance by allowing the swarm to be more dense due to the more compact and resilient design. We are also able to widen the applications as the pooled computing allows the platform to make complex decisions otherwise not possible with individual computers. This will drive the swarm intelligence industry to greater heights as an optimized swarm platform is critical for research applications.