

**Paper Title:**

Formation Control Implementation Using Kobuki TurtleBots and Parrot Bebop Drone

**Abstract:**

Formation control of a collection of vehicles is a topic that has generated a lot of interest in the research community. This interest primarily stems from the increased performance and robustness that is provided by a swarm of agents as compared to an individual member. Formation control can be achieved through many approaches. The approach used by this paper is based on a leader-follower premise. A network of agents can be controlled by assigning a leader for each agent in the formation. The group as a whole will be capable of following either a Virtual Leader (VL) or an agent within the group. The algorithm applied to a test-bed consisting of three Kobuki TurtleBot2 robots. Each Turtlebot2 is programmed to follow a pre-defined virtual point in the formation. The test space is monitored by a Parrot Bebop drone hovering overhead that identifies agents uniquely through image processing techniques. The agents can then move in the test space, based on the leader's position, while maintaining a formation.