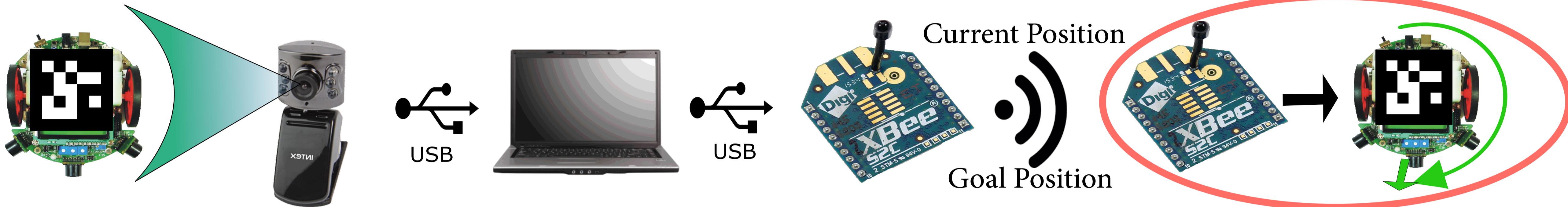


Formation Control Of Multiple Swarm Robots

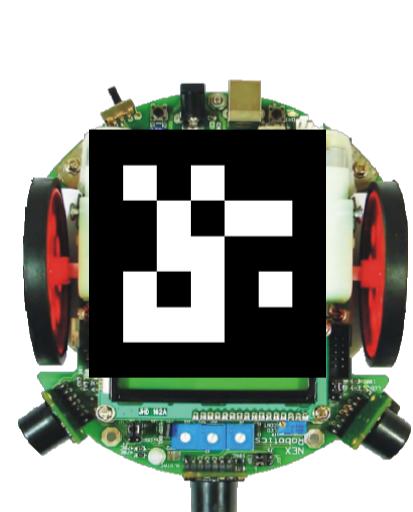
Om Singh, Chirag Shah

Mentor: Abhinav Sarkar, Avinash Kumar Dubey

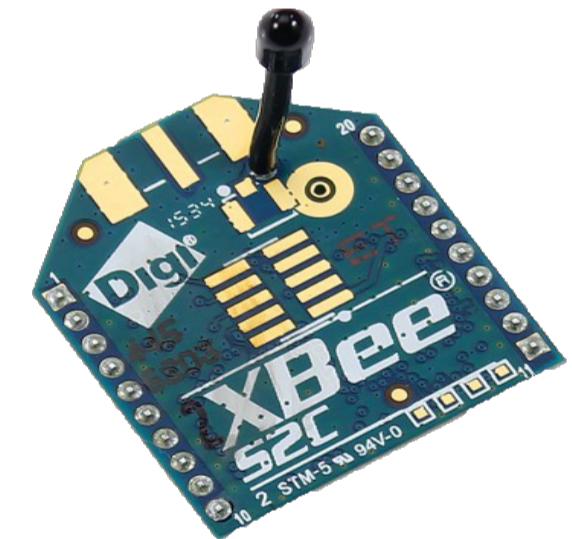


ABSTRACT:

The project is inspired by swarm behavior in bees and ants. Master-slave topology is used for controlling the robots. The master (laptop) detects the markers and hence obtains the position and orientation of the robots. The master sends robot's current coordinates and goal coordinates to the robot and the robot moves accordingly so as to reach the goal point avoiding other robots present in the way. Similarly multiple robots are directed to multiple goal points resulting in a desired formation.



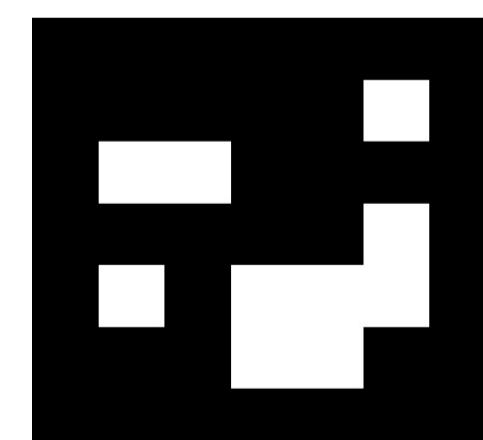
Spark V Robot



XBee Module

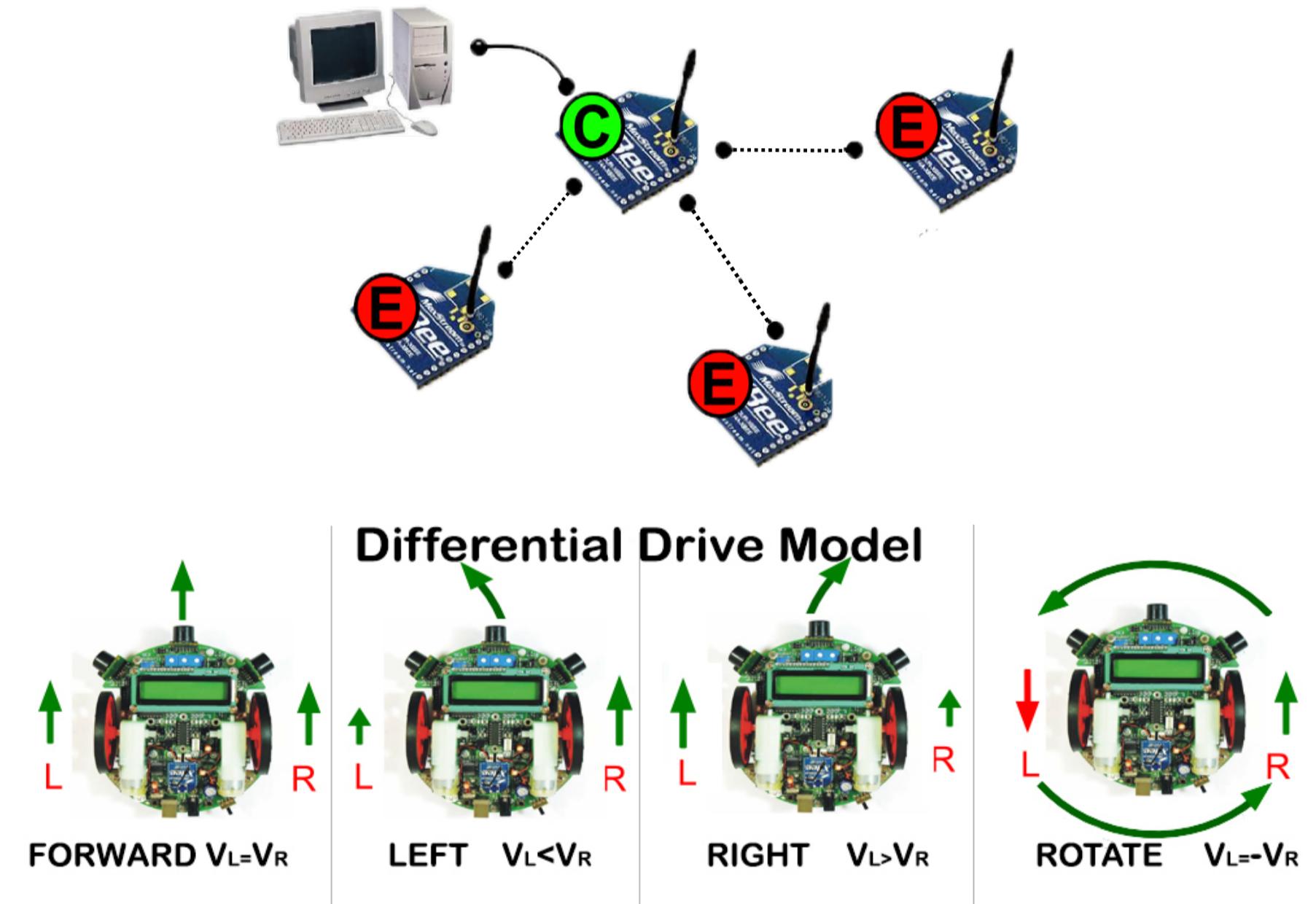
ARUCO MARKER:

The ArUco Marker is a synthetic square marker composed of a wide black border and a binary matrix which determines its identifier(id).



The black border facilitates its fast detection in the image and binary codification allow identification and error correction techniques.

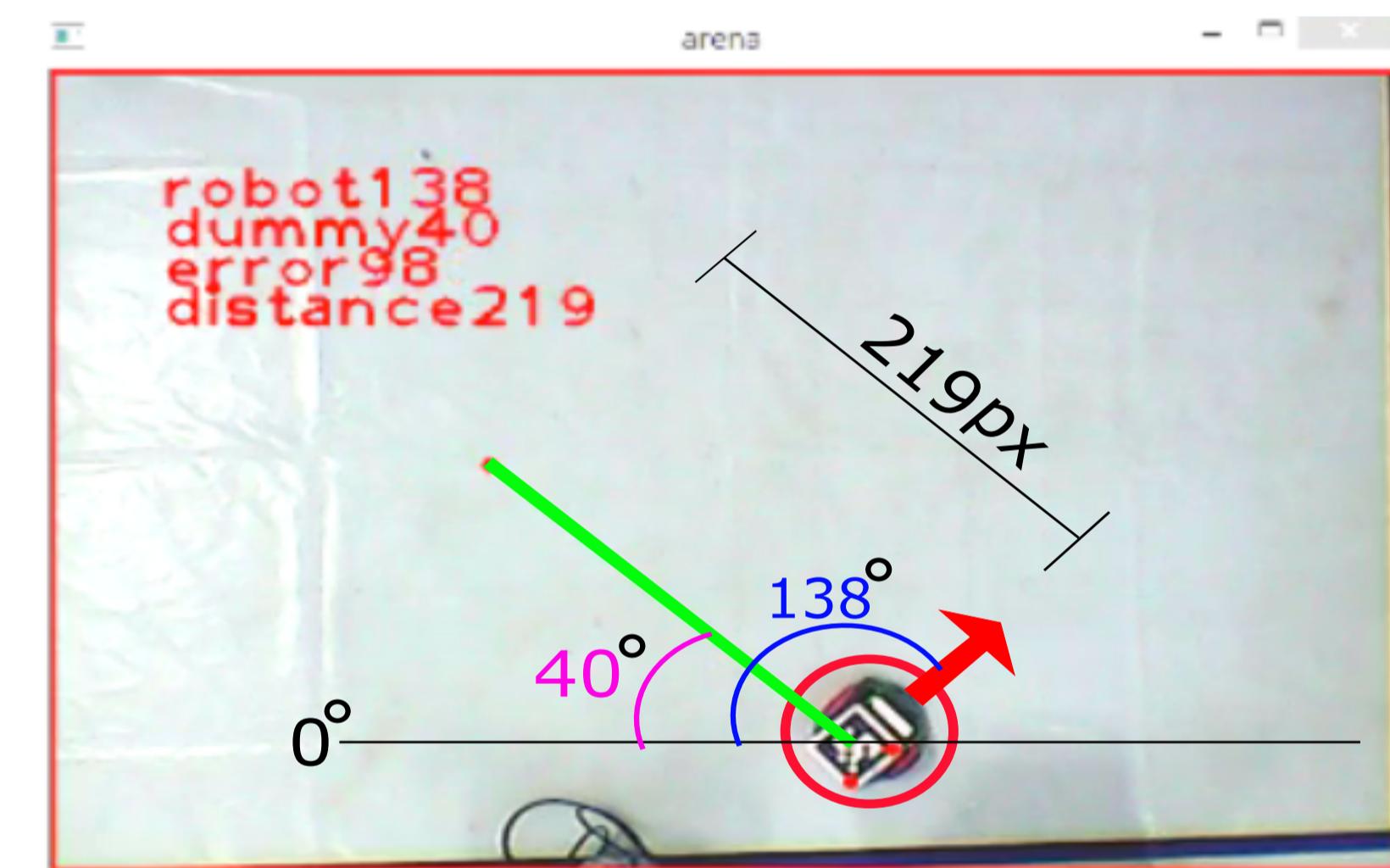
COMMUNICATION TOPOLOGY



WORK FLOW

ArUco Marker .detection
Position and orientation detection
XBee Configuration
XBee interfacing with python
Setting up Spark V
XBee interfacing with Spark V
Go-To-Goal and PID Controller
Scaling up for multiple roots
Collision avoidance

OUTPUT:



FORMATION:

