

IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Interactive Presentations - IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (IP)

Author: Ms. SANDYA RAO
India

DESIGN AND DEVELOP THE SWARM AI FLYING ROBOTS/DRONES (SPACE WINGS)
INTEGRATING WITH AI ROVER FOR THE SURVEILLANCE, NAVIGATION, MAPPING AND
COLLECTING DATA

Abstract

Notion Robotics Lab researchers are designing to improve the efficiency of a swarm of autonomous rover/robots search and rescue in an unknown environment. Wheeled rovers like Curiosity have been a huge success from a planetary science perspective. But there are some missions, that are a little bit beyond their skill set like caves, mountain etc. Beside the one big rover, Notion Robotics Lab researchers designing the swarm intelligence technologies which is smaller, cheaper and faster explores to work together and share information. Such systems, with individual are capable of surviving in hostile environment. Notion Robotics Lab wants to deploy the Swarm AI Flying Robots/ Drones like the prototype to places that would have been impossible for rovers to access like the inside the Martian Volcanoes, the rough terrain, consisting of caves and mountains, a swarm of different Robots/Drones is advantageous. But especially areas with a rough surface like deep canyons are interesting for the search of water and of extra-terrestrial life. These are promising for application such as search and rescue because they can rapidly travel above the obstacles. These networks of swarms embedded in the environment with local sensing, processing and communication can solve the complex surveillances, navigation tasks without global information. Notion Robotics Lab intelligent swarm of autonomous Robots/Drones able to provide valuable mapping of dangerous and uncertain situation, that's can autonomously communicate with one another and quickly build a detailed floor plan map of an entire structure and beam it to nearby Landers/Rovers. Once one of the Swarm AI Flying Robots/Drones finds something's interesting, it can use radio communication to call the robotic brethren over to help collect samples. This could fly in to an unknown environment to see if it would make a safe place for astronauts to set up a base or can collect critical information before humans arrive, away from the harsh elements. We are also developing the comprehensive simultaneous Localization and Mapping algorithm is suitable to realize a relative positioning.

Keywords: - Artificial Intelligence, Swarm Fly Robots/Drones, Localization, Mapping, Inter- Communication.