

Micro-rovers autonomy for planetary exploration

Advanced Space Concepts Laboratory

Micro-rovers for planetary exploration can be deployed in large numbers. This decreases unit costs, due to higher production volumes, facilitates the exploration of multiple sites of interest simultaneously and allows spare rovers for higher risk operations. Micro-rovers autonomy is essential for path planning and swarm control, and for the exploration of an unknown planetary environment. This talk will summarise the research activities on-going at the Advanced Space Concepts Laboratory on micro-rover autonomy. Multiple rover interaction via dynamic attractive and repulsive artificial potential fields is used to shape and manoeuvre groups of autonomous wheeled robots. A real world implementation through experimental testbed will be demonstrated. Moreover, a non-deterministic, deliberative-reactive system for exploration autonomy in harsh, unknown environments will be presented.