

## **Fast robot path planning with Laplacian Behaviour-Based control via four-point explicit decoupled group SOR**

### **Abstract**

This study proposed a robot path planning technique that employs Laplacian Behaviour-Based Control (LBBC) for space exploration which relies on the use of Laplace's equation to constrain the generation of the potential function of the configuration space of a mobile point-robot. The LBBC provides the Searching algorithm with the capability to escape from flat region, whilst iteration via Four-point Explicit Decoupled Group SOR (4EDGSOR) provides fast computation for solving the Laplace's equation that represent the potential values of the configuration space.