

Efficient Learning of Dynamics Models using Terrain Classification

Bethany R. Leffler Christopher R. Mansley
Michael L. Littman

Terrain classification in robotics has heavily focused on determining a region for traversal, while also labeling obstacles. Our work attempts to expand this essentially binary viewpoint and to use terrain classifiers as an indicator for different system dynamics. By learning multiple models of the system dynamics, the robot is able to assess alternative paths based on traversal costs of different terrain types instead of strict distance metrics. We demonstrate a system that reliably learns an optimal control policy using this additional terrain information and contrast it with several systems based on more traditional methods that fail to reliably complete the same task.