

Tracked Robot with Blade Arms to Enhance Crawling Capability

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Abstract : This paper presents a tracked robot with blade arms powered to assist movement in difficult environments. As a result, the tracked robot is able to pass a ramp or climb stairs. The main feature is a pair of blade arms on both sides of the vehicle body working in collaboration with previously validated transformable track system. When the robot encounters an obstacle in a terrain, it enlists the blade arms with power to overcome the obstacle. In disaster areas, there usually will be terrains that are full of broken and complicated slopes, broken walls, rubbles, and ditches. Thereupon, a robot, which is instructed to pass through such disaster areas, needs to have a good off-road capability for such complicated terrains. The robot with crawling-assisting blade arms would overcome the obstacles along the terrains, and possibly become to be a rescue robot. A prototype has been developed and built; experiments were carried out to validate the enhanced crawling capability of the robot.

Keywords : tracked robot, rescue robot, blade arm, crawling ability, control system

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