

Design of a Robot with a Transformable Track System in Tackling Motion Barrier

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Abstract : This paper presents a ground robot which has the tracked transformative structures of the motion mechanism. The robot has a good ability to adapt to the terrain, due to the front end of the track can be deformed, it can more easily pass the more complex area, such as to climb stairs and ramp areas. Usually in the disaster area, where the terrain is generally broken and complicated, there will be many slopes, broken walls, rubble, and obstacles, then if you want the robot through this area, you need to have a good off-road performance for possible complex terrain, this robot with the transformative tracked mechanism has a strong adaptability, it can overcome the limitation of the terrains to be a good rescue robot. Also, the robot has a good flexibility in the shape of contact with the ground; that can adapt the varied terrain by the deformable track, thus able to pass the different terrains, that was verified through the experiments on a test-platform and a field test. The prototype of the robot system has been developed, and experiments are carried out to verify the validity of the proposed design.

Keywords : tracked robot, rescue robot, transformation mechanism, deformable track, hull design

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