



Variable Geometry Tracked Vehicle, description, model and behavior

Submitted by Emmanuel Lemoine on Thu, 01/30/2014 - 14:53

Titre Variable Geometry Tracked Vehicle, description, model and behavior

Type de publication Communication

Type Communication avec actes dans un congrès

Année 2008

Langue Anglais

Date du colloque 2008

Titre du colloque Mecatronics

Titre des actes ou de la revue Mecatronics

Pagination 21-23

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Pays France

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Résumé en anglais

This paper presents a prototype of tracked UGV (Unmanned Grounded Vehicles) called B2P2. This tele-operated robot has been designed to intervene in unstructured environments like for example battlefield or after an earthquake. This robot based on an original system of multiple articulations can be classified into the VGTV (Variable Geometry Tracked Vehicle) category. The proposed concept allows the robot to adapt its shape in order to increase its clearing capability. Unlike existing robots, the tension of the caterpillars is actively controlled and can be turned off to increase the robot/ground contact surface needed for some special kind of obstacles. After a short state of the art, the paper presents the detailed architecture of the robot. The third part introduces the geometric model of the robot followed by the control algorithm used to tense or release the caterpillars. The behavior of the robot over several obstacles (staircase, curb and bumper) is analyzed and the necessity of releasing the tracks is discussed.

Notes Date du colloque : 05/2008

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