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A neural-based model for fast continuous and global robot location

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Abstract-

One of the problems in the field of mobile robotics is the estimation of the robot position in an environment. This paper proposes a model for estimating a confidence interval of the robot position in order to compare it with the estimation made by a dead-reckoning system. Both estimations are fused using heuristic rules. The positioning model is very valuable in estimating the current robot position with or without knowledge about the previous positions. Furthermore, it is possible to define the degree of knowledge of the robot previous position, making it possible to adapt the estimation by varying this knowledge degree. This model is based on a one-pass neural network which adapts itself in real time and learns about the relationship between the measurements from sensors and the robot position.

Index Terms- first location problem; location; mobile robot; neural network

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