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Demonstration of the propagation of the stochastic error of the odometric model by the recurrency

Edern Ollivier, *Member, IEEE*

edern.ollivier.fr@ieee.org

17 RUE DE L'AMIRAL HAMELIN at Paris 16 (75116)

Abstract—The odometric model is demonstrated herein. We have been resolving to simulate, integrate, explain and then to validate the odometric model. The model of resolution is to be programmed in the Maple language, with the help of a solver for Maple 2021.

Index Terms—Odometry; Vehicle location and navigation systems; Mobile positioning systems; Trajectory; Discretization of a model; Control of a vehicle; Resolution analysis; Recurrency analysis.

I. INTRODUCTION

As one introduction, I could say that the odometric model is well known now and that everything is shaped for the solution to be executed under Maple 2021.

The reasoning by recurrency has been done to fully demonstrate the given equations as given as below.

II. SYSTEM OF EQUATIONS

The equations are given by the article “Odometric Navigation with Matching of Landscape Features.” as given by [1].

III. SOLUTION

I have been using the stochastic formulation of the solution by adding the noise, it is because of the propagation of the odometric errors, which are the precision on the heading angle and the mismatches of the odometric data, involved in the system of the equations of the odometric model.

IV. RESOLUTION

The demonstration is the initialization of the recurrency given with the execution of the equation of the odometric model on the system of the equations in the rank $n-1$ to the rank n .

V. CONCLUSION

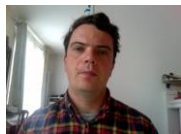
As one conclusion, I could say that the odometric model is well known now and that everything is done for the solution of a model of automation to be resolved with the odometric model, and moreover the demonstration has been applied to the system of the equations of the odometric model to ensure that the error propagation become true.

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REFERENCES

- [1] E. Ollivier and M. Parent, "Odometric navigation with matching of landscape features," 7th International Conference on Control, Automation, Robotics and Vision, 2002. ICARCV 2002., 2002, pp. 757-762 vol.2, doi: 10.1109/ICARCV.2002.1238517.



Edern Ollivier was born in Paris XI, Paris, France in 1977. He received M.S. degrees in automation from the ENSMM, Besançon, in 2001 and the M.S. degrees in computer engineering from the FH of Karlsruhe, Karlsruhe, Germany, in 2001.

From 2001 to 2004, he was an Expert Engineer with the Inria of Rocquencourt. His research interests include the development of the Cybercars, SLAM, EKF and Front End Electronics.