Electronic Journal: Southwest Journal of Pure and Applied Mathematics
Internet: http://rattler.cameron.edu/swjpam.html
ISSN 1083-0464
Issue 1, July 2003, pp. 43–55.
Submitted: August 4, 2002. Published: July 1 2003.

NONLINEAR CONTROLLERS FOR A PLANAR ROBOT ARM IN A CONSTRAINED ENVIRONMENT

Jito Vanualailai and Bibhya Sharma

Abstract. In this article, we explore the fundamentals of an emerging technique applicable, at least, in principle, to robot navigation, or motion planning. Termed the Second Method of Lyapunov, it is currently a powerful mathematical technique used to study the qualitative behaviour of natural or man-made systems that could be modeled, in an approximate way, by differential equations. We review the Lyapunov method and then in a simple and direct way, we use it to propose a theoretical technique to control the motion of a planar arm in a constrained environment. The controllers are mathematical entities which are nonlinear in nature. Computer simulations are used to illustrate the effectiveness of the proposed controllers.

A.M.S. (MOS) Subject Classification Codes. 34D20, 37B25, 70E60

Key Words and Phrases. Lyapunov Stability, Lyapunov Function, Robot Dynamics and Control, Findpath Problem, Motion Planning

Department of Mathematics and Computing Science, University of South Pacific, Suva, FIJI
E-mail Address: vanualailai@usp.ac.fj

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