

ABSTRACT

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IMPLEMENTATION OF FUZZY LOGIC FOR PARKING TRUCK SYSTEM

(xii + 44 pages; 18 images; 5 tables; 1 appendix)

Dynamic system is often characterized by a high difficulty of mathematical modeling, the large scope of dimensions in decision making and many other complex things. Thus, the advanced control system is required to handle very complex things which cannot be solved by a linear control system.

Therefore, an 'intelligence' factor in the control system is required, and one of them is fuzzy logic system. Fuzzy Logic is commonly used in a system that the mathematical model of the plant is hard to find or even none, such as the Truck Backer-Upper system. The goal of this system is to back up a truck to its loading dock. There are three steps in controlling a system using fuzzy logic : fuzzification, rule evaluation, and defuzzification. In every stage, the fuzzy should produces a steering angle that backs up the truck to the loading dock from any initial position in the loading zone.

In implementation, the final position of the truck in the loading dock is near-perfect. Accuracy level from 70 data samples for each variable is $x = 99.998\%$, $y = 99.542\%$, and $\phi = 99.988\%$. From these implementations, it is proven that fuzzy controller can be used to adjust system.

Reference : 16 (1992 - 2012)

Key word : Defuzzification, Fuzzification, Loading Dock, Fuzzy Logic, Rule Evaluation, Steering Angle, Truck Backer-Upper.