



DESIGN OF BACKING-UP FUZZY CONTROLLERS BASED ON VARIABLE UNIVERSE OF DISCOURSE

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Abstract- Fuzzy controllers with variable universe of discourse (VUD) have been applied in many fields of intelligent controlling because of their high-accuracy performance. This paper provides a lookup table method to design backing-up fuzzy controllers based on VUD. By setting a set of random start points, input-output data pairs are obtained using test-driving method. One data pair defines one fuzzy rule and also assigns the strength of every fuzzy rule. Conflicting fuzzy rule groups are integrated into

one fuzzy rule by selecting the one with the maximum strength. A fuzzy rule table is built by the fuzzy rules deduced from input-output data pairs. Simulation experiments show that the VUD fuzzy controller outperforms the general fuzzy controller in accuracy at the final position of the parking lot.

Index terms: Fuzzy controller, fuzzy system, variable universe of discourse, backing-up.