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GENETIC ALGORITHM-BASED FUZZY CONTROLLER TO AVOID NETWORK CONGESTION

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ABSTRACT—Based on optimal theory, Kelly model realizes the bandwidth allocation on network with proportional fairness and has asymptotical stability. However, the primal algorithm of Kelly model leads to the packet accumulation in the queue of the bottleneck link. By using heuristic fuzzy rules, this paper designs a fuzzy controller to adjust the additive increase parameter of the primal algorithm dynamically. Then genetic algorithm is used to optimize the scaling gains of the fuzzy controller, which is called GA-based fuzzy controller in this paper. The primal algorithm with the GA-based fuzzy controller can avoid the packet accumulation and keep the fairness and asymptotical stability. Thus it improves the performance of the primal algorithm.

Key Words: intelligent control, genetic algorithm, fuzzy control, network congestion control