

Abstract This paper mainly covers the development of a fuzzy controller and a robust embedded visual system to follow a ground robot target by an indoor or blimp robot. The presented control strategy is based on the visual information given by embedded computer vision. To realize the autonomous ground target following, an efficient vision-based object detection and localization algorithm is proposed by using Speeded Up Robust Features technique. The vision feedback is optimized by fuzzy set model to correct the prediction position information and then it is integrated with the blimp's flight control system to guide it to follow the ground target. The fuzzy control system was implemented to make blimp robot complete the whole navigation performance and approaching the target. The overall vision system has been tested in actual flight missions, and the results show that the system is effective, robust and suitable for complex controls task.