

## **Vision based tracking control of an autonomous mobile robot in an indoor environment**

### **Abstract**

In this paper, we present a scheme for target acquisition scheme for mobile robot that will use vision sensor. The scheme in order to accurately measures the location of a target in real world coordinates and finds the distance to the target from the mobile robot. Fuzzy logic control laws for differential steering control of the autonomous nonholonomic mobile robot are developed. Certain requirements for the fuzzy logic control laws are presented to chose suitable rule base for the fuzzy logic controller in order to make the system asymptotically stable. The stability of the proposed fuzzy logic controller is theoretically proved and also demonstrated by simulation studies. Finally, the proposed fuzzy logic controller is implemented on the nonholonomic mobile robot and the results show that the proposed fuzzy controller can achieve the desired turning angle and the mobile robot follows the target satisfactorily.

**Keywords** — Mobile robot, differential steering control, fuzzy controller, vision, autonomous, navigation