

AUTONOMOUS FIRE FIGHTING ROBOT

A report submitted to
M S RAMIAH INSTITUTE OF TECHNOLOGY,
Bangalore – 54

For partial requirement of award of degree of
Bachelor of Engineering in Mechanical Engineering

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(Autonomous Institute, Affiliated to VTU)
May 2012
Bangalore – 54

ABSTRACT

An autonomous robot with 4 degrees of freedom has been designed and fabricated for the purpose of extinguishing a fire. The robotic platform is driven by a 2-wheel, differential drive system with a guiding castor wheel at the front. It consists of a robotic arm manipulator that has 2 links, which can rotate in both the horizontal plane as well as the vertical plane. At the 2 joints are two precision servomotors, which enable the arm to align itself with great accuracy.

The flame, which is simulated by a candle, is detected by a system consisting of two cameras, which returns the location of the flame to the robot. The flame is then extinguished by means of a fan, which is the end effector located on the arm of the robot. The entire process is controlled and processed real time via an onboard computer.