HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING COURSE

DIPLOMA PROJECT

MICROCONTROLLER BASED
AUTONOMOUS LINE FOLLOWER

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JUNE 2005

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MICROCONTROLLER BASED AUTONOMOUS LINE FOLLOWER

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Dedicated to my friend George Kyprianou

Microcontroller based autonomous line follower

Project report submitted by
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to
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Introduction

A robot is a computer-controlled machine that is programmed to move, manipulate objects, and accomplish work while interacting with its environment. The term robot originates from the Czech word robota, meaning "compulsory labor." It was first used in the 1921 play R.U.R. (Rossum's Universal Robots) by the Czech novelist and playwright Karel Capek. The word robot has been used since to refer to a machine that performs work to assist people or work that humans find difficult or undesirable.

There are many classes of robots; here are a few of them

- Arthropod robots
- Autonomous research robots
- BEAM robots
- Humanoid robots
- Hyper redundant robots
- Locomotion styles
- Nanorobots
- Service robots
- Social robots

Arthropod robots are robots which mimic the behavior of animals with an exoskeleton such as lobsters, insects and shellfish. Autonomous research robots as the name implies work by their own without any human intervention, in other words they are pre programmed to perform a specific task. BEAM robot is an acronym for Biology, Electronics, Esthetics and Mechanics. These types of robots use simple analog circuits instead of a microprocessor. A humanoid robot is a robot with its overall appearance based on that of the human body. In general humanoid robots have a torso with a head, two arms and two legs, although some forms of humanoid robots may model only part of the body, for example, from the waist up. Some humanoid robots may also have a 'face', with 'eyes' and 'mouth'. Hyper redundant robots are usually zoomorphic that is they resemble the appearance of animals in a macroscopic structure. Locomotion style robots can be further sub-divided into differential

wheeled robots, biped robots, hexapods and snakebots. A nanorobot is a nanotechnological robot nanomachine, also called a nanite, which is a mechanical or electromechanical device whose dimensions are measured in nanometers (millionths of a millimeter, or units of 10^{-9} meter). Service robots simply provide service and can be further sub divided into domestic, educational, entertainment, industrial, laboratory, medical and military. A social robot is an autonomous robot that interacts and communicates with humans by following the social rules attached to its role.

In this particular project a simple robot that follows a line is presented.