DESIGN AND DEVELOPMENT OF PC CONTROLLED ROBOTIC ARM TRAINER

Design Project

REX A. RUBIO

BRYAN OWEN S. SANTOS

College of Engineering and Information Technology

CAVITE STATE UNIVERSITY

Indang, Cavite

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DESIGN AND DEVELOPMENT OF PC CONTROLLED ROBOTIC ARM TRAINER

Undergraduate Design Project
Submitted to the Faculty of the
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REX A. RUBIO
BRYAN OWEN S. SANTOS

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ABSTRACT

RUBIO, REX A. and SANTOS, Bryan Owen S. Design and Development of Optical Fiber Trainer. Undergraduate Design Project. Bachelor of Science in Electronics and Communications Engineering. Cavite State University, Indang, Cavite. March 2010. Adviser: Engr. Michael T. Costa.

The Robotic Arm Trainer is an introduction to the study of Robotics. Basic knowledge in robotics is enough to be able to operate the trainer. It contains all the components for controlling the robotic arm including the software, circuit module and the robotic arm itself.

The trainer will demonstrate the basic operation and control of the robotic arm using the computer. Knowledge about the basics of robotics will be gained through experiments and operation.

The movements of the robot arm were controlled via parallel port of a computer using various keys on the keyboard. Five DC geared motors and an electromagnet had made possible the movements of the parts/joints of the robot arm. Relay board driver was used to control the switching of both the DC geared motors and the electromagnet and also to protect the computer from any damage resulting from certain failures of the hardware and to automate the robot for repetitive tasks. A program was also developed using Visual Basic version 6 under Windows XP platform to act as an intermediary between the user and the robot arm.

This is a trainer for EcE students under the subject of robotics. A Laboratory Manual is included which covers several possible experiments for students to perform.

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DESIGN AND DEVELOPMENT OF PC CONTROLLED ROBOTIC ARM TRAINER[1/]

RUBIO, Rex A.
SANTOS, Bryan Owen S.

[1/]An Undergraduate Design Project submitted to the faculty of Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for graduation with the degree of Bachelor of Science in Electronics and Communications Engineering with Contribution No. CEIT 2010-2011 014 . Prepared under the supervision of Engr. Michael Costa.

INTRODUCTION

The word robot is derived from the Czechoslovakian term *robota* which is generally translated as 'forced labor.' This means that the original conception of a robot, as far the etymology of the word is concerned, was to be a capable servant. It was first used in the play by the Czechoslovakian author Karel Capek entitled R.U.R. (Rossum's Universal Robots, 1921). In the play, robots were portrayed as small, artificial and anthropomorphic creatures strictly obeying their master's orders. From this humble conception, many authors began getting inspirations from the concept of a robot. The most famous of all the authors that wrote about robots is Isaac Asimov. He was the one who formulated the four laws of robots: (0) a robot may not injure humanity, or through inaction, allow humanity to come to harm, (1) a robot may not injure or harm a human