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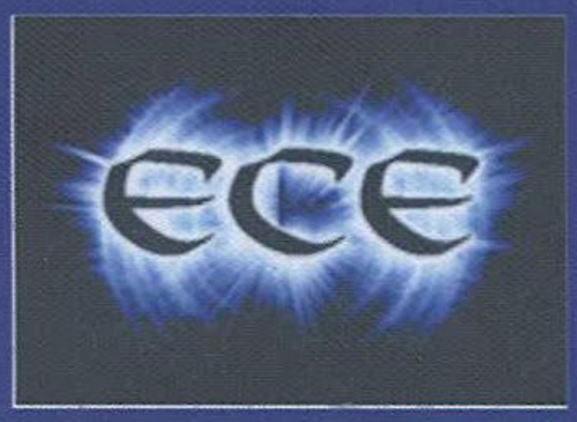

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PROJECT REPORT ON:

"SIMPLIFIED HAPTIC DRIVE: A ROBOT FOR ARM AND WRIST REHABITATION"

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CHAPTER

INTRODUCTION

1.1. OBJECTIVE AND SCOPE OF PROJECT

Haptics is the science of applying tactile sensation to human interaction with computers. A haptic device is one that involves physical contact between the computer and the user, usually through an input/output device, such as a joystick or data gloves, that senses the body's movements. By using haptic devices, the user can not only feed information to the computer but can receive information from the computer in the form of a felt sensation on some part of the body. This is referred to as a haptic interface. For example, in a virtual reality environment, a user can pick up a virtual tennis ball using a data glove. The computer senses the movement and moves the virtual ball on the display. However, because of the nature of a haptic interface, the user will feel the tennis ball in his hand through tactile sensations that the computer sends through the data glove, mimicking the feel of the tennis ball in the user's hand.

Haptic communication is the means by which people and other animals communicate via touching. Touch is an extremely important sense for humans, as well as providing information about surfaces and textures it is a component of nonverbal communication in interpersonal relationships, and vital in conveying physical intimacy. Haptic interfaces are robots that provide information to people by manipulating them. The information is a reflection of sensed forces by a remotely controlled slave robot or by a computer simulation. This kinesthetic or tactual information is a compliment to visual or auditory perception, in order to build a better mental model of what is being probed or to guide a control function. Ordinarily we think of force-reflecting hand controllers or exoskeletons as comprising haptic interfaces, and this is in accord with the Greek origin of the term haptics.