

RAI 817: BioRobotics

Textbook

1. Biorobotics –Methods and Applications, edited by Barbara Webb and Thomas R . Consi.

Objective

2. The objective of this course is to develop expertise of the multidisciplinary field of BioRobotics. The course involves detailed study of Biosignals and the principals of Bio Mechanical Designs.

Course Outcome

3. After studying this course students will be able to use Human Neurological Signals for operations of various kinds of Robots. The course will also enable students to develop Biomatic Robotic systems.

Course Outline

| Topics | Allocated Periods |
|--|-------------------|
| <ul style="list-style-type: none"><input type="checkbox"/> Introduction to biomechatronics and biorobotics.<input type="checkbox"/> Types of biosensors and instruments.<input type="checkbox"/> Modeling and design of prosthetic devices.<input type="checkbox"/> Principle of electromyography (EMG).<input type="checkbox"/> Design of prosthetic devices.<input type="checkbox"/> Control of prosthetic devices using EMG – preprocessing and pattern recognition.<input type="checkbox"/> Control of prosthetic devices using EMG – control command generation.<input type="checkbox"/> Bio-inspired machines.<input type="checkbox"/> Robotic rehabilitation.<input type="checkbox"/> Brain-controlled robotics.<input type="checkbox"/> Functional near-infrared spectroscopy based brain-computer interfaces. | 45 |