SEMINAR REPORT

on

Advanced Robotic Arm

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Under the Guidance of
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T. E. Computer Engineering (2018-2019)

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CERTIFICATE

This is to certify that

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Has Successfully Delivered

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Towards the Partial Fulfilment of Bachelor's

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Abstract:

Quality of life of individuals suffering with movement disorders can be improved using assistive robotic devices. Robotic arm can help people with upper body mobility to perform daily tasks. Controlling robotic arm manually can be challenging for wheelchair users with upper extremity disorders. An autonomous wheelchair mounted robotic arm is built using a computer vision interface. It consists of: a robotic arm with six degrees of freedom, an electric wheelchair, computer system and two vision sensors. The first vision sensor detects the coarse position of the colored objects placed randomly on a shelf placed in front of the wheelchair using a computer vision algorithm. Another vision sensor ensures correct position of object in front of the gripper and thus, provides fine localization. The arm is then controlled automatically to pick up the object and return it to the user. Performance of the robotic arm is evaluated after conducting tests by placing objects at different locations. The tasks are completed under one minute. Experiments are done to implement a camera based vision system integrated with a computer vision algorithm to recognize object deformation and spatial coordination to control the deviation from the original training. The visualization systems are able to detect the objects as well as their distance from the End-effecter and transmit the signals to the drive system.