Group Project – First Draft

Title: Making a Robot Traverse along an Arbitrary Curve

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Problem Statement:

The aim of this project is to make a robot traverse along an arbitrary curve input by the user in the form of a binary image containing 2 D curves of arbitrary shapes. To provide feedback to the robot, a camera held in position above the robot tracks its path and supplies the necessary information to correct the robot's path.

Plan for Solution of the Problem:

We need to convert the curve in the image to an array of continuous points and divide the resultant path to smaller segments and find the angle by which the robot should turn at various points along the curve.

We need to constantly compare the path traced by the robot (obtained by the tracking camera) with that of the input curve in order to make necessary corrections to minimize the error.

Image processing algorithms need to be used to extract the path being traced by the robot from its images.

Requirements:

Hardware – A camera to be interfaced with the robot for providing feedback about the path traced by it.

Software – Matlab for processing the images captured by the camera and to generate the necessary feedback information for the robot.