Project Report Title	:	Development of 4 Axes Screw Driver Robot by using Force and Visual Feedback
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Abstract

This project is the development of the 4-axis Cartesian robot applies to drive screws into mental plate, The constrain of this performing has specified by the three conditions, one is reach to each position hole accurately with the error 1 in mm., each one is the angle of screw, the degree of center along vertical line of screw, acts to mental plate must be perpendicular each other with error 2 in degree, the last is an ability to controls torque while the screw was diving for ensure the tightness occurred between screw and work piece.

According to constrain above, the robot consist of four AC-servo motor in each axis working as Positioning Control System, two CCD cameras mounted in two different view for digital image processing working as visual feedback for Perpendicular or Angle Control System, and a current level instrument amplifier circuit board with strain gauge working as Torque Control System .By using a computer with C# Programming for GUI and C++ Programming on ARM7 microcontroller for data acquisition, the previous three systems has combined to invented the robot.

Result test of robot performing indicated that the robot accomplished the constrain of working, those are satisfying the three conditions that is reach to each position hole accurately with the erro1 in mm., it has the angle between the screw and horizontal sufficient to be perpendicular with error 2 degree , and given the controllable tightness between screw and work piece representing by torque value. Moreover, the robot could also spit the screw out if one or more is inconsistent the condition.