

Product Name :
Fuzzy Control Ball-On-Plate

Product Code :
AR188



Description :

Fuzzy Control Ball-On-Plate

Technical Specification :

Fuzzy Control: Ball-On-Plate

A ball-plate model acts as a weakly-coupled mechanical multivariable system. A fuzzy control is used to move the ball to a specific position quickly and with as little movement of the plate as possible, even when the position of the ball is modified by external influences.

The position of the ball is measured without feedback using a touch panel and the crisp signals sent to the fuzzy controller, where the signals are transformed into fuzzy input values and inferenced before being transformed back into a crisp output value. Two servo motors act as actuators during this process. The inclination of the plate is modified by the movements of the respective motors; these movements are transferred to the plate by the drive rod.

Develop parallel fuzzy controls using microcontroller technology

Two-axis ball-plate system as mechanical multivariable system, mimo (multiple inputs - multiple outputs)

Switchable between fuzzy and manual mode

2 servo motors used as actuators to swivel the plate

Microcontroller with usb port as fuzzy controller

FSH-Shell development software for designing and optimising the fuzzy controller; software via USB under Windows 7, 8.1, 10 including PC1 Computer-System with 21" TFT-Monitor Win 10 engl.

Resistive analog touch panel as ball position sensor

Potentiometer as plate inclination sensor

Part of the structured learning concept: level 2b

Technical Data:

Plate

Length x Width : 378x303mm

Ball

Diameter: 35mm

Weight: 174g

2 servo motors

Operating voltage: 5,0V

Actuation torque, interpolated: 206Ncm

Actuator velocity, interpolated: 0,18s/60°

Microcontroller

8bit microcontroller Zilog Z8Encore

12-fold ADC 8bit

Touch panel

Operating voltage: 5,5V

Active area: 378,5x303mm

230V, 50Hz, 1 phase

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