Ball on Plate Balance

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MIT-IIT Robotics Program 2017

Ball on Plate Lab

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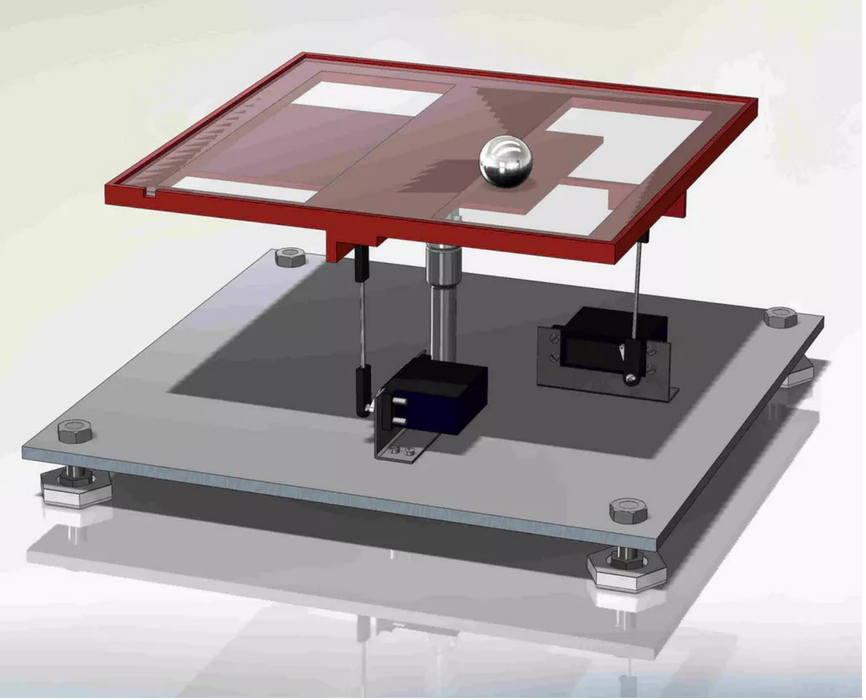

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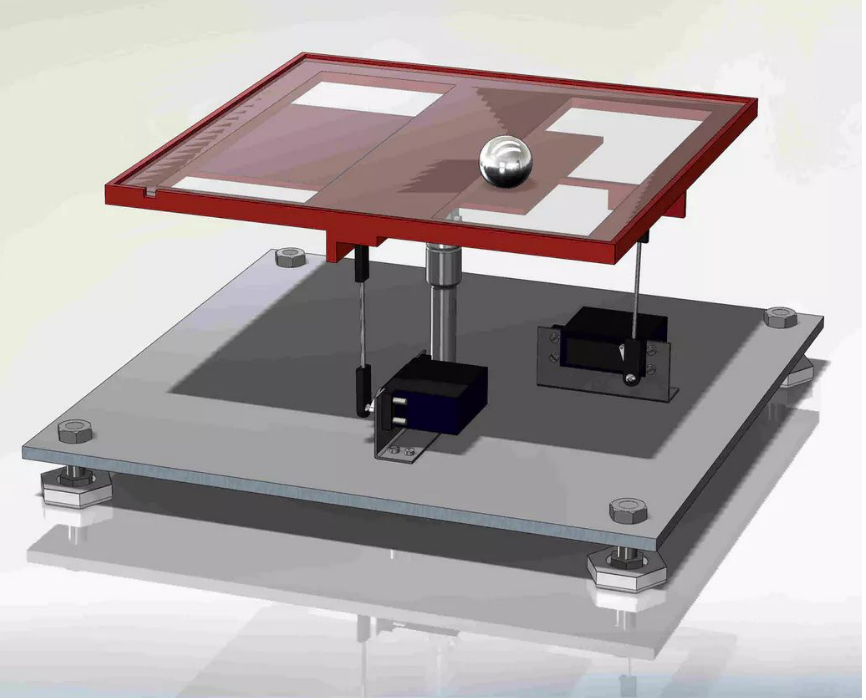
- It has an x and y-dimension which allows the ball to roll along different paths.



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Parameters

Input: The variable we're trying to control (double)
Output: The variable that will be adjusted by the pid (double)
Setpoint: The value we want to Input to maintain (double)
Direction: Direction the output will move when faced with a given error. DIRECT is most common.

Compute()

Description

Contains the pid algorithm. it should be called once every loop(). Most of the time it will just return without doing anything. At a frequency specified by SetSampleTime it will calculate a new Output.

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Parameters

None

Returns

True: when the output is computed

False: when nothing has been done

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Specifies whether the PID should be on (Automatic) or off (Manual.) The PID defaults to the off position when created.

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Syntax

SetMode(mode)

Parameters

mode: AUTOMATIC or MANUAL

SetOutputLimits()

Description

The PID controller is designed to vary its output within a given range.

Syntax

SetOutputLimits(min, max)

SetSampleTime()

Decription

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Syntax

SetSampleTime(SampleTime)

Parameters

SampleTime: How often, in milliseconds, the PID will be evaluated. (int>0)

Balancing Ball on Beam Plate Code Steps

- Include the libraries you're using
- Define servo pin, Kp, Ki, Kd, Setpoint, Input, Output, and ServoOutput
- Initialize your PID object and your Servo
- Start the `setup()`
- After you finish your `setup()`, move to the `loop()`