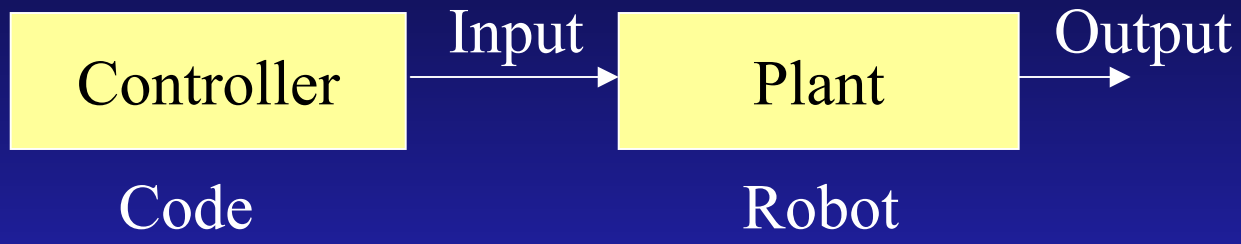
LECTURE 3

ENGR5: Intro to Engineering Practice

MEM Project

LEGO Robotics & Control – Killough's Platform

Open-Loop Control

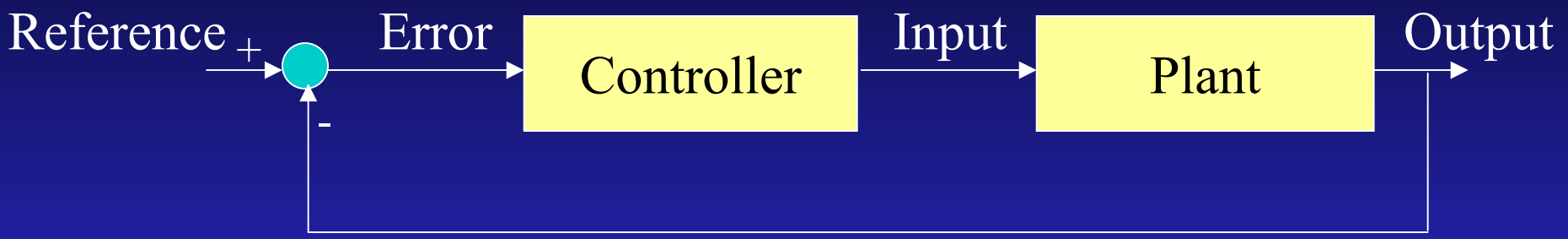


Input: Motor Commands
Output: Position

Controller's KEY Question: How well am I doing?

NO ANSWER!

Closed-Loop Control

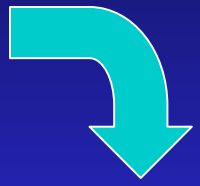


Input:	Motor Commands
Output:	Position
Reference:	Line
Error:	Distance from the line

Now the controller can correct the input of the plant to achieve the objective!!!

Light Sensors

WHITE	White_Value
BLACK	Black_Value



These values depend on:
-Room lightning
-Distance of the sensors from the table

CALIBRATION

Sensor Reading Interpretation

LEFT SENSOR	RIGHT SENSOR	INTERPRETATION	ACTION
BLACK	BLACK	ON TRACK	KEEP THERE
BLACK	WHITE	MOVING RIGHT	TURN LEFT
WHITE	BLACK	MOVING LEFT	TURN RIGHT
WHITE	WHITE	OUT OF TRACK	BACK TO LINE MEMORY?

Built-in Functions

SENSORS: int light(int p)

Returns the value of the light sensor in port p.

int light_passive(int p)

Returns the value of the light sensor in port p when the LED emitter is turned off. NOT very useful in this case.

Assignment

- Build a program that makes the platform moves backward when it hits the wall
- Build a program that makes the platform return to the line when it is disturbed by an external agent