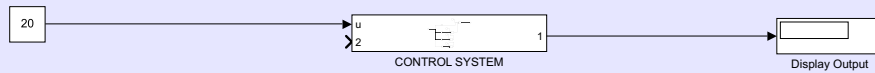# SELF-BALANCING EV

LIGHT INDICATION SYSTEM

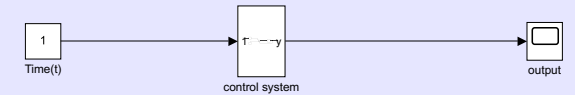Version 1

Input -
INDICATOR BUTTONS

Enter 10 - For Right Indicator Button
Enter 20 - For Headlamp
Enter 30 - For Left Lamp

20

u
2   1
CONTROL SYSTEM

Display Output

SELF-BALANCING SYSTEM

VERSION 1

1
Time(t)

control system

output

ANTI-LOCK BRAKING SYSTEM (ABS)

Version 1

INPUT:
Wheel slip = 0.5
Mass of vehicle (m) = 100
Gravity (g) = 9.81
Moment of inertia (I) = 5
Radius of wheel (R) = 2
Initial Velocity (v0)=100

0.5
Desired Wheel Slip

1

wheel speed
2

actual relative slip
4

Control System

1
2
3
4

OUTPUT
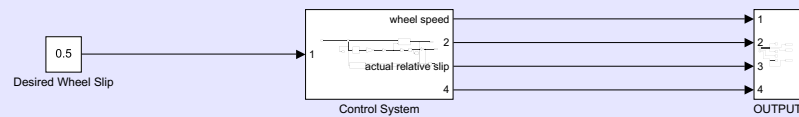
BATTERY MANAGEMENT SYSTEM

VERSION 1

Group 1

Signal 1   Input_signal   Input_signal

<SOC (%)>
<Current (A)>
<Voltage (V)>

control_system

1
2
3

out-put

1

1

== 0

1
u

10
Right Indicator

== 10

20
Head Lamp

== 20

30
High Speed

== 30

2

1		
error		

error   out(+1/-1)

bang-bang controller

$\frac{num(s)}{den(s)}$

hydraulic lag

$\frac{1}{s} \int$

braking torque

1/I

$\frac{1}{s} \int$

wheel speed

1
wheel speed

2
tyre torque

1

actual relative slip

1

wheel speed

1

2

vehicle speed

actual relative slip

+
−

x ÷

Simscape Electrical
not installed

powergui

Simscape Electrical
not installed

Vehicle battery

cape Ele
ot installe

Controlled Current Source

<SOC (%)>

1

<SOC (%)>

<Current (A)>

2

<Current (A)>

1

Input_signal

<Voltage (V)>

3

<Voltage (V)>