

[File List]

(1) Analysis and MATLAB Practice of Planar Robots (Any Version)

<CH1_Analysis\1_Position_Analysis>

- skm_2dof.m : position analysis of the 2-DOF serial robot (output: Figure)
- skm_2dof_vrml.m : position analysis of the 2-DOF serial robot (output: VRML)
- skm_3dof.m : position analysis of the 3-DOF serial robot (output: Figure)
- skm_3dof_vrml.m : position analysis of the 3-DOF serial robot (output: VRML)
- fivebar_type1.m: position and Jacobian analysis of the 5-bar (Type1) robot (output: Figure)
- fivebar_type2.m: position and Jacobian analysis of the 5-bar (Type2) robot (output: Figure)
- pkm1.m: position and Jacobian analysis of the 3-DOF parallel robot (output: Figure)

<CH1_Analysis\2_Jacobian_Analysis>

- skm_2dof_Jacobian.m: Jacobian analysis of the 2-DOF serial robot
- skm_3dof_Jacobian.m: Jacobian analysis of the 3-DOF serial robot

<CH1_Analysis\3_Dynamics_Analysis>

- falling_sphere.m: Forward dynamics simulation of a falling sphere
- mechanical_system.m: Simulation of the second-order mechanical system equation
- forward_2dof.m: Forward dynamics simulation of the 2-DOF serial robot
- dyn_2dof.m: Inverse dynamics simulation of the 2-DOF serial robot
- dyn_3dof.m: Inverse dynamics simulation of the 3-DOF serial robot

(2) SimMechanics Simulation Practice (version: MATLAB 2012b)

<CH2_SimMechanics>

- sim_2r_fd.mdl: Forward dynamics simulation of the 2-DOF serial robot
- sim_2r_id_j.mdl: Inverse dynamics simulation of the 2-DOF serial robot in the joint space
- sim_2r_id_c.mdl: Inverse dynamics simulation of the 2-DOF serial robot in the Cartesian space
- sim_3r_id.mdl: Inverse dynamics simulation of the 3-DOF serial robot in the Cartesian space
- sim_5bar1_id.mdl: Inverse dynamics simulation of the 5-bar (Type1) robot in the Cartesian space
- sim_5bar2_id.mdl: Inverse dynamics simulation of the 5-bar (Type2) robot in the Cartesian space
- sim_3rrr_id.mdl: Inverse dynamics simulation of the 3-DOF parallel robot robot in the Cartesian space

[File List]

(3) Control Practice of Planar Robots (version: MATLAB 2012b)

<CH3_Control\0_DAQ_Test1>

- DAQ_Test1.mdl: I/O DAQ hardware test

<CH3_Control\1_Joint_Control1>

- Joint_Control_ch1.mdl: Angle control of the first motor(66:1)
- Joint_Control_ch2.mdl: Angle control of the second motor(33:1)
- Joint_Control_ch3.mdl: Angle control of the third motor(33:1)

<CH3_Control\2_SKM_2R_1 >

- Cart_Control_SKM_2R.mdl: Position control of the 2-DOF serial robot in the Cartesian space
- Control_Gcode_SKM_2R.mdl: Trajectory control of the 2-DOF serial robot using G-code
- Cart_Control_SKM_2R_Gravity.mdl: Position control of the 2-DOF serial robot with gravity compensation

<CH3_Control\3_SKM_3R_1 >

- Cart_Control_SKM_3R.mdl: Position control of the 3-DOF serial robot in the Cartesian space
- Control_Gcode_SKM_3R.mdl: Trajectory control of the 3-DOF serial robot using G-code
- Cart_Control_SKM_3R_Gravity.mdl: Position control of the 3-DOF serial robot with gravity compensation

<CH3_Control\4_Fivebar_1 >

- Cart_Control_Fivebar_Type1.mdl: Position control of the 5-bar (Type1) robot in the Cartesian space
- Cart_Control_Fivebar_Type2.mdl: Position control of the 5-bar (Type2) robot in the Cartesian space
- Control_Gcode_Fivebar_Type1.mdl: Trajectory control of the 5-bar (Type1) robot using G-code
- Control_Gcode_Fivebar_Type2.mdl: Trajectory control of the 5-bar (Type2) robot using G-code

<CH3_Control\5_PKM_3RRR_1 >

- Cart_Control_PKM_3RRR.mdl: Position control of the 3-DOF parallel robot in the Cartesian space
- Control_Gcode_PKM_3RRR.mdl: Trajectory control of the 3-DOF parallel robot using G-code

<CH3_Control\Trajectory1>

- tr1.m: Generation of trajectory data from G-code like trajectory in txt format. (Note) Output file name should be specified as follows: "Enter the file name to save:" (skm1: 2-dof serial robot, skm2: 3-dof serial robot, five1: 5-bar (Type1) robot, five2: 5-bar (Type2) robot, pkm1: 3-DOF parallel robot)

<Common>

- plot_file.m or plot_file1.m: plotting of the experimental results stored at the xPC Target

[File List]

(4) Project Practice (version: MATLAB 2012b)

<CH4_Projects\Ch4_1_Arduino_Projects>

- onoff1.mdl: Reading of on/off-type sensors using Digital Input block
- analog1.mdl: Measuring of analog-type sensors using Analog Input block
- Servo_Motor1.mdl: Control of servo motors
- DC_Motor1.mdl: PWM Output and Analog Input for DC motors
- PID_Control1.mdl: PID control of a DC motor with potentiometer feedback
- Robot_2R_Keypad1.mdl: Position control of the 2-DOF serial robot with the forward and inverse kinematics modes

<CH4_Projects\Ch4_2_Walking_Robots>

- Walking_6bar.mdl: Control program for the walking robot with 6-bar legs
- Walking_8bar.mdl: Control program for the walking robot with 8-bar legs
- sixbar.m, sixbar_both.m: MATLAB simulation of the walking robot with 6-bar legs
- eightbar.m, eightbar_both.m: MATLAB simulation of the walking robot with 8-bar legs
- sim_6bar_w.mdl: SimMechanics simulation of the walking robot with 6-bar legs
- sim_8bar_w.mdl: SimMechanics simulation of the walking robot with 8-bar legs

<CH4_Projects\Ch4_3_Haptics>

- Haptics_5bar_Type2.mdl: Control program of the 5-bar (Type2) haptic device
- menu_xy.m: Menu for the control program of the 5-bar (Type2) haptic device
- XY-Move.wrl: VRML file for the 5-bar (Type2) haptic device