Simulation ROS/Gazebo Network

Gazebo Application

Crazyflie Model SDF

Vicon Plugin
Topic: /ENV/viconState_UKF

Stickyfoot Plugin
Topic: /ENV/Pad_Connections

IMU Plugin
Topic: /CF_Internal/IMU

Laser_sensor
Topic: /CF_Internal/Laser_sensor

OF Sensor Plugin
Topic: /CF_Internal/OF_sensor

Motor Plugin
Topic: /CF_Internal/MS_PWM

Camera Sensor
Topic: /CF_Internal/camera/image_raw

Landing Surface Model SDF

Ceiling Body Contact Plugin
Topic: /ENV/BodyContact

Ceiling Force/Torque Plugin
Topic: /ENV/Surface_FT_sensor

Controller Node

Topic: /RL/cmd

Topics:
/CTRL/data
/CTRL/debug

CF_DataConverter Node

Topics:
/CF_DC/StateData   /CF_DC/FlipData
/CF_DC/ImpactData   /CF_DC/MiscData

Topic: /RL/cmd

RL/Data Logging Node
Topic: /RL/data
Topic: /RL/cmd
Topic: /RL/convg_data

Topic: /RL/convg_data

Dashboard GUI
Node

Topic: /CF_DC/StateData

Header header
geometry_msgs/Pose Pose
geometry_msgs/Twist Twist
geometry_msgs/Vector3 Eul

float64 Tau
float64 OFx
float64 OFy
float64 RREV
float64 D_ceil

float64[4] FM
float64[4] MS_PWM

float64 NN_flip
float64 NN_policy

geometry_msgs/Vector3 x_d
geometry_msgs/Vector3 v_d
geometry_msgs/Vector3 a_d

Topic: /CF_DC/FlipData

Header header
bool flip_flag
geometry_msgs/Pose Pose_tr
geometry_msgs/Twist Twist_tr
geometry_msgs/Vector3 Eul_tr

float64 Tau_tr
float64 OFx_tr
float64 OFy_tr
float64 RREV_tr
float64 D_ceil_tr

float64[4] FM_tr

float64 NN_tr_flip
float64 NN_tr_policy

Topic: /CF_DC/ImpactData

Header header
bool impact_flag
bool BodyContact_flag
geometry_msgs/Pose Pose_impact
geometry_msgs/Twist Twist_impact
geometry_msgs/Vector3 Eul_impact

geometry_msgs/Vector3 Force_impact
float64 Impact_Magnitude

uint8 Pad_Connections
uint8 Pad1_Contact
uint8 Pad2_Contact
uint8 Pad3_Contact
uint8 Pad4_Contact

Topic: /CF_DC/MiscData

Header header
float64 battery_voltage

Topic: /RL/cmd

uint16 cmd_type
geometry_msgs/Point cmd_vals
float32 cmd_flag

Topic: /RL/convg_data

float32[] mu_1_list
float32[] mu_2_list

float32[] sigma_1_list
float32[] sigma_2_list

uint16[] reward_list
uint16[] reward_avg_list

Topic: /RL/data

string trial_name
string agent
string error

uint16 k_ep
uint16 k_run

uint8 n_rollouts
float32 h_ceiling

float32[] mu
float32[] sigma
float32[] policy

float32 reward
float32 reward_avg

float32[] vel_d
bool impact_flag
bool body_contact
uint8 leg_contacts