

ChoreoLib

LabVIEW

Reference

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Introduction

The ChoreoLib LabVIEW library provides utility functions to read, sample, and follow Choreo trajectories.

The library source code, package build specifications, and test package can be found here

<https://github.com/jsimpso81/ChoreoLabVIEW>

Function Menus

A Choreo function palette contains the Choreo functions and type definitions. This palette can be accessed from the WPI Robotics Library Third Party palette.

TO DO

Function Help

Each VI includes help that can be accessed using the standard LabVIEW help toggle (Ctrl H).

TO DO

Function Examples

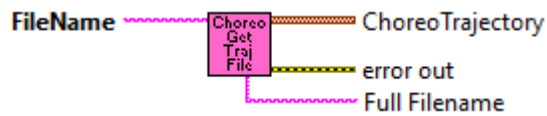
Many of the functions have examples that can be found under the LabVIEW "Find examples..." function. (Help -> Find Examples...). The function examples are easiest to find when "Directory Structure" is selected.

TO DO

Function Groups

Choreo

Choreo_Choreo_GetTrajectory



Load a Choreo trajectory from a JSON formatted file.

Inputs:

- filename - string - The name of the trajectory file. See notes below on file naming.

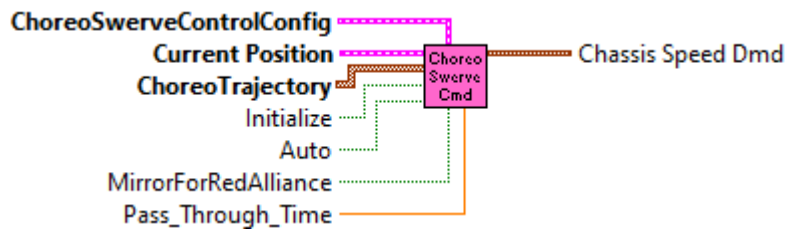
Outputs:

- Trajectory - cluster - Trajectory read from JSON file.
- Error out - cluster - Error cluster
- Full Filename - string - fully qualified file name.

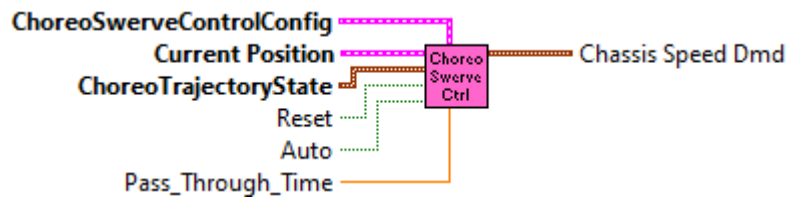
Notes on file naming:

- The file name must include the extension. ".json" is not automatically appended to the name.
- The file name can be a simple file or an absolute path. If a simple file name is used the default path on the RoboRIO is: "home:\lvuser\natinst\LabVIEW Data". On a Windows PC the default path is the LabVIEW default directory. Normally this is: $\text{\textcircled{S}}\% \text{HOMEDRIVE} \% \text{HOMEPATH} \% \text{Documents} \backslash \text{LabView Data}$.
- Filenames on the RoboRIO, which runs Linux, are case sensitive.

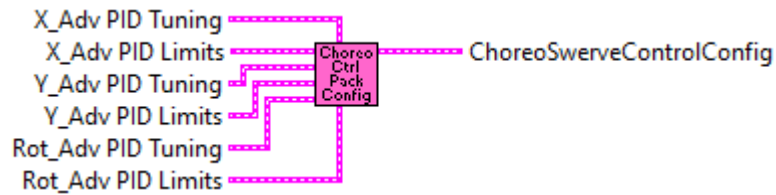
Choreo_Choreo_SwerveCommand



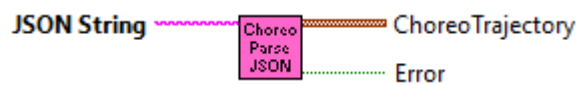
Choreo_Choreo_SwerveController



Choreo_Choreo_SwerveControllerPackConfig



Choreo_Choreo_TrajectoryFromJSON



Parse a choreo trajectory from a JSON formatted string.

Inputs:

- JSON String - string- The string containing the choreo trajectory.

Outputs:

- trajectory - cluster - Trajectory read from JSON file.
- Error - boolean - TRUE if an error occurred.

Trajectory

Choreo_Trajectory_Flipped



Inputs:

Outputs:

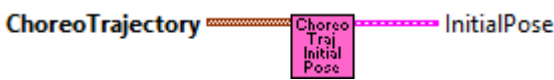
Choreo_Trajectory_GetFinalPose



Inputs:

Outputs:

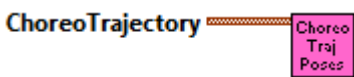
Choreo_Trajectory_GetInitialPose



Inputs:

Outputs:

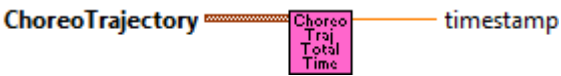
Choreo_Trajectory_GetPoses



Inputs:

Outputs:

Choreo_Trajectory_GetTotalTime



Inputs:

Outputs:

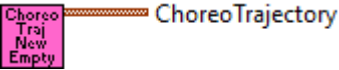
Choreo_Trajectory_GetTrajState



Inputs:

Outputs:

Choreo_Trajectory_New_Empty



Inputs:

Outputs:

Choreo_Trajectory_Sample



Inputs:

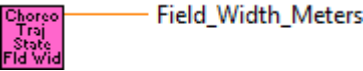
Outputs:

Choreo_Trajectory_SampleInternal



TrajectoryState

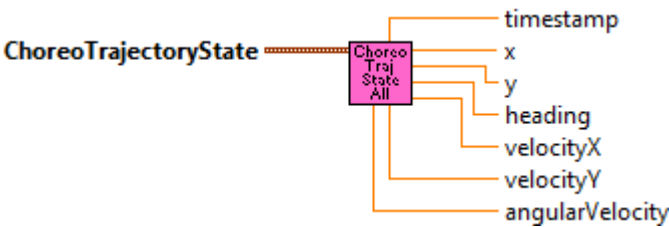
Choreo_TrajectoryState_FieldWidth



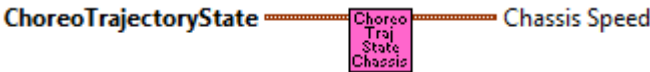
Choreo_TrajectoryState_Flipped



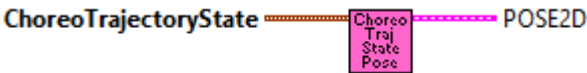
Choreo_TrajectoryState_GetAll



Choreo_TrajectoryState_GetChassisSpeeds



Choreo_TrajectoryState_GetPose



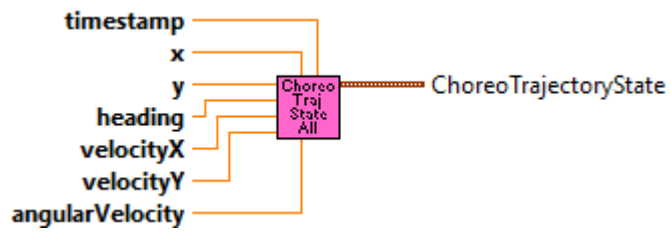
Choreo_TrajectoryState_GetTime



Choreo_TrajectoryState_Interpolate



Choreo_TrajectoryState_New



Type Definitions

TypeDef

TypeDef-ChoreoSwerveControlConfig



ChoreoSwerveControlConfig

X_Adv PID Limits	Y_Adv PID Limits	Rot_Adv PID Limits
MaxInput <input type="text" value="0"/>	MaxInput <input type="text" value="0"/>	MaxInput <input type="text" value="3.14159"/>
MinInput <input type="text" value="0"/>	MinInput <input type="text" value="0"/>	MinInput <input type="text" value="-3.14159"/>
Continuous <input checked="" type="checkbox"/>	Continuous <input checked="" type="checkbox"/>	Continuous <input checked="" type="checkbox"/>
MaxOutput <input type="text" value="9.9E+32"/>	MaxOutput <input type="text" value="9.9E+32"/>	MaxOutput <input type="text" value="9.9E+32"/>
MinOutput <input type="text" value="-9.9E+32"/>	MinOutput <input type="text" value="-9.9E+32"/>	MinOutput <input type="text" value="-9.9E+32"/>

X_Adv PID Tuning	Y_Adv PID Tuning	Rot_Adv PID Tuning
Kf <input type="text" value="0"/>	Kf <input type="text" value="0"/>	Kf <input type="text" value="0"/>
Kp <input type="text" value="3"/>	Kp <input type="text" value="4"/>	Kp <input type="text" value="5"/>
Ki <input type="text" value="0"/>	Ki <input type="text" value="0"/>	Ki <input type="text" value="0"/>
Kd <input type="text" value="0"/>	Kd <input type="text" value="0"/>	Kd <input type="text" value="0"/>
MaximumIntegral <input type="text" value="9.9E+30"/>	MaximumIntegral <input type="text" value="9.9E+30"/>	MaximumIntegral <input type="text" value="9.9E+30"/>
MinimumIntegral <input type="text" value="-9.9E+30"/>	MinimumIntegral <input type="text" value="-9.9E+30"/>	MinimumIntegral <input type="text" value="-9.9E+30"/>
Filter Derivative <input checked="" type="checkbox"/>	Filter Derivative <input checked="" type="checkbox"/>	Filter Derivative <input checked="" type="checkbox"/>

TypeDef-ChoreoTrajectory

Choreo
Traj

ChoreoTrajectory

0

timestamp

0

x

0

y

0

heading

0

velocityX

0

velocityY

0

angularVelocity

0

TypeDef-ChoreoTrajectoryState

Choreo
Traj
State

ChoreoTrajectoryState

timestamp

0

x

0

y

0

heading

0

velocityX

0

velocityY

0

angularVelocity

0

Enumerated Type Definitions
