Hochschule
Bonn-Rhein-Sieg

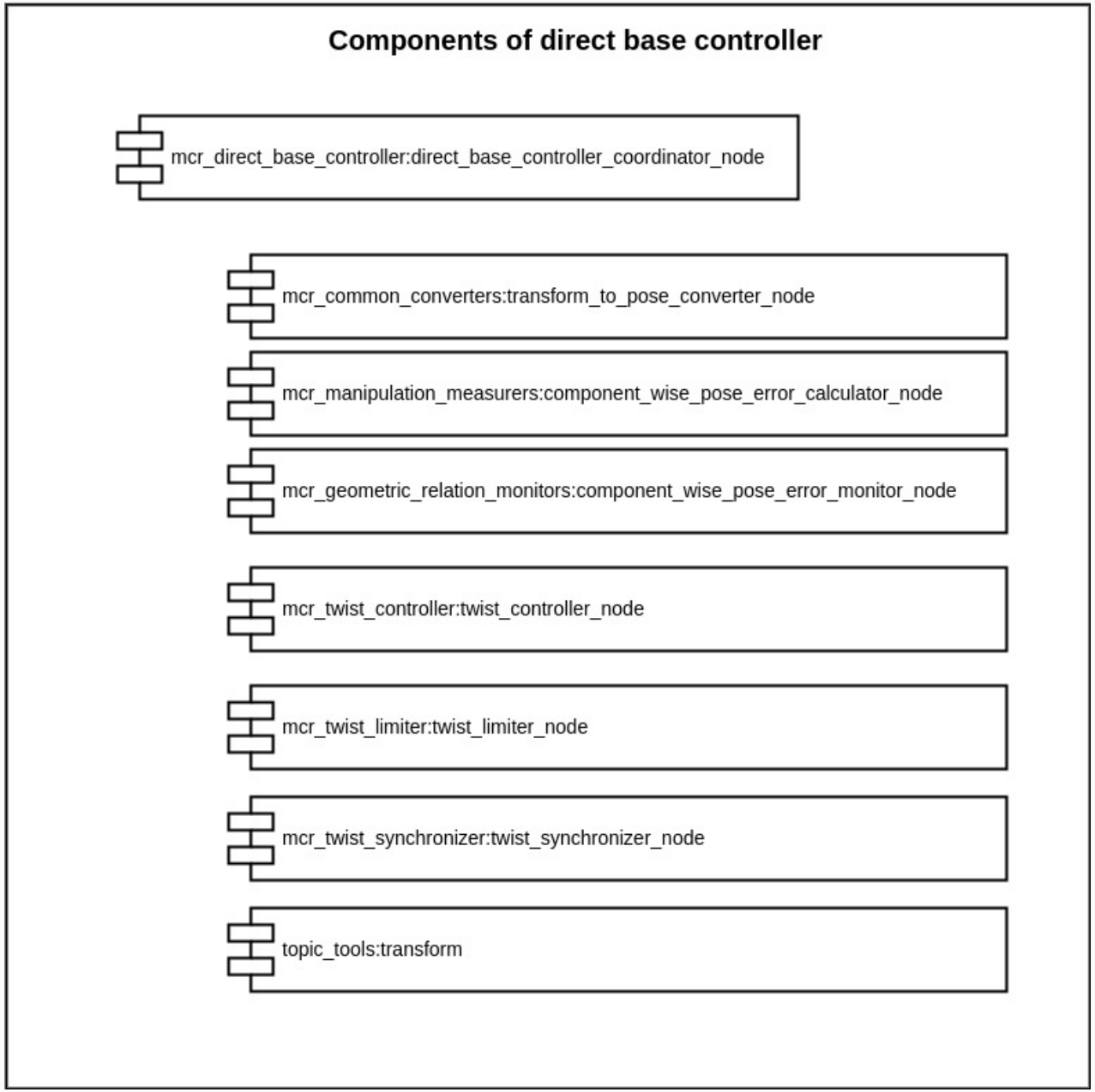
Software Development Project

Direct Base Controller (DBC)

Aaqib Parvez Mohammed, Md Zahiduzzaman, Pranjal Dhole, Ramit Sharma

Presentation date: 29.01.2018

DBC Overview



direct base controller coordinator

Input
`loop_rate, near_zero`

Subscribe
`event_in`

Publish
`event_out, base_twist`

Task
Coordinates all other nodes which has been merged into this node

transform to pose converter

Input
`reference_frame(odom), target_frame(base_link)`

Output
`geometry_msgs/PoseStamped`

Task
Converts a transform, between a target frame with respect to a specified frame, into a pose

Component wise pose error calculator

Input

`current_pose`: pose of current position.

`target_pose`: pose of target position.

Output

`pose_error`: difference in six pose components (3 linear + 3 angular).

Task

Calculates the error between two poses in three linear components and three angular components.

component wise pose error monitor

Input

`linear_threshold`: `double` (specified by the user).

`angular_threshold`: `double` (specified by the user).

`pose_error`: The component-wise Cartesian pose error.

Output

`bool`: `True` if within threshold.

Task

Checks whether the pose difference between current pose and target pose is within the specified threshold.

twist controller

Input
`p_gain_x, p_gain_y, p_gain_z, p_gain_roll, p_gain_pitch, p_gain_yaw, pose_error`

Output
`geometry_msgs/TwistStamped`

Task
Calculates a twist to reduce the difference between two pose

twist limiter

Input
calculated twist represented as a `geometry_msgs/TwistStamped` message

Output
`limited_twist`

Task
Limit a twist if it exceeds the specified maximum.

twist synchronizer

Input

`limited_twist`: twist to be synchronized.

`pose_error`: The component-wise Cartesian pose error.

Output

`synchronized_twist`

Task

Synchronizes the velocities of a twist (represented as a `geometry_msgs/TwistStamped` message), such that each component of a Cartesian error (compensated by the twist's velocities) simultaneously reaches zero.

twist transform

Input
`geometry_msgs/TwistStamped`

Output
`geometry_msgs/Twist`

Task
Converts one message format to another


ENOUGH TALK!!!
SHOW ME A DEMO!!!