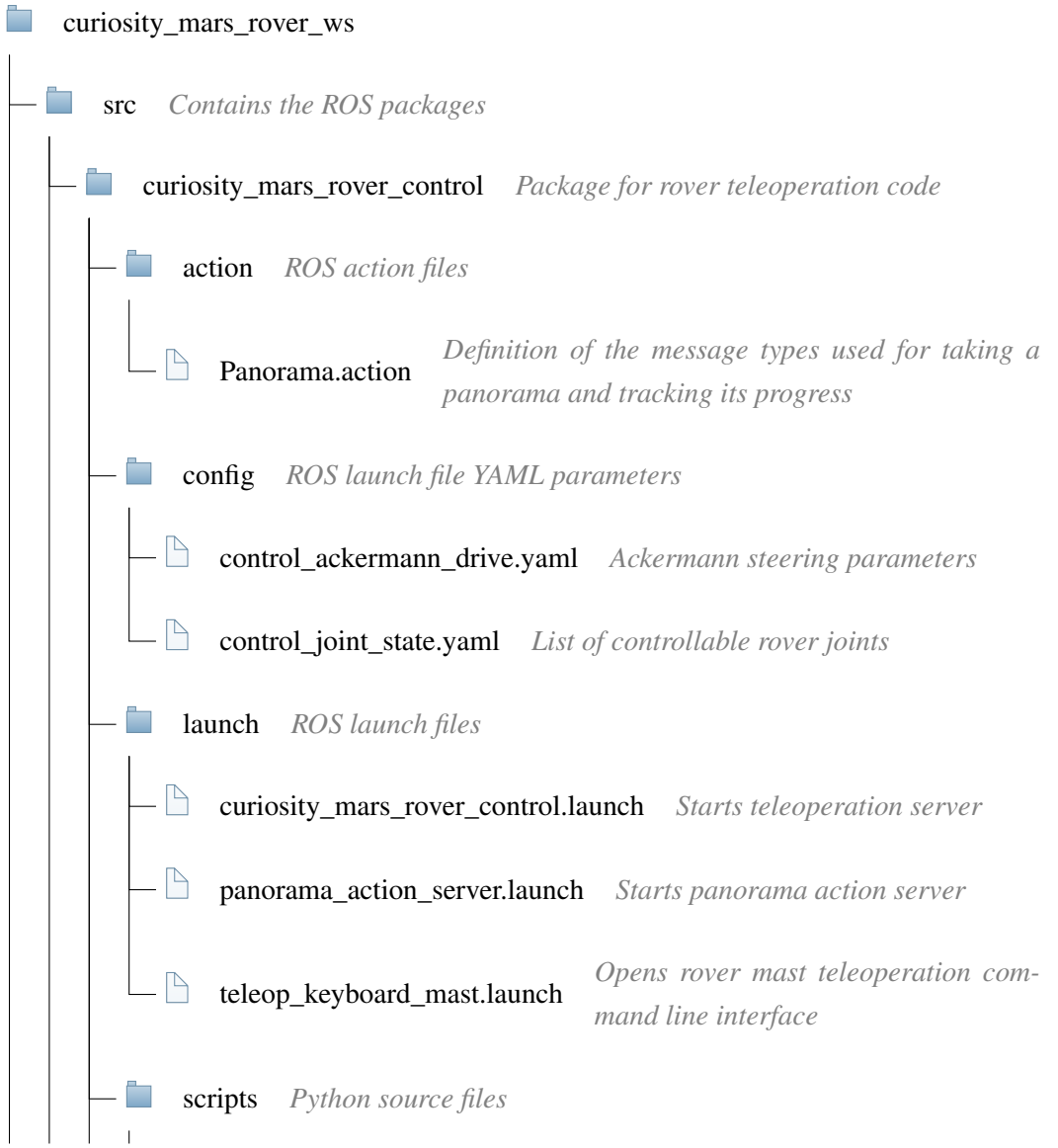
Appendix D

Source Code File Listings

The files and folders included in the software package are listed below with information about the purpose of each. Any `CMakeLists.txt` or `package.xml` files are excluded as they are mainly autogenerated. The contents of folders that only contain imported files are also excluded.



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- arm_and_mast.py *Create services for control of rover arm and mast*
- gps_publish.py *Publishes the rover's exact location coordinates*
- panorama.py *Calls panorama action server and rotates mast*
- teleop_keyboard_mast.py *Provides rover mast teleoperation*
- srv *ROS service messages*
  - Arm.srv *Messages for updating arm position*
  - Mast.srv *Messages for updating mast position*
- curiosity_mars_rover_description *Package containing the rover definition and 3D models*
  - launch
    - curiosity_mars_rover_spawn.launch *Creates instance of Curiosity rover in current Gazebo world*
  - meshes *Imported rover 3D models (contents not listed)*
  - urdf *Rover definition URDF/Xacro files*
    - arm.xacro
    - chassis.xacro *Main body of the rover*
    - curiosity_mars_rover_properties.xacro *Common parameter macros*
    - curiosity_mars_rover.gazebo *Rover parameters for Gazebo*
    - curiosity_mars_rover.xacro *Main URDF rover definition file*
    - left_wheel_group.xacro
    - macros.xacro *Reusable functionality such as cameras*

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- right_wheel_group.xacro
- sensor_mast.xacro
- wheel.xacro *Reusable wheel macro (six of these are instantiated)*
- curiosity_mars_rover_gazebo *Package containing the Gazebo environments and simulation launch files*
  - launch *The top-level launch files for the whole package.*
    - main_mars_path.launch *Starts simulation with original environment*
    - main_mars_photo.launch *Starts simulation with photogrammetry world*
    - main_mars_terrain.launch *Starts simulation with DTM world*
    - main_shapes.launch *Starts simulation with navigation testing world*
    - main_simple.launch *Starts simulation with specified world and calls rover description package launch file*
  - models *3D model files for environments (contents not listed)*
  - worlds *Gazebo world SDF definitions*
    - flat.world
    - mars_path.world
    - mars_photo.world
    - mars_terrain.world
    - shapes.world
- curiosity_mars_rover_navigation *Navigation implementation*
  - config

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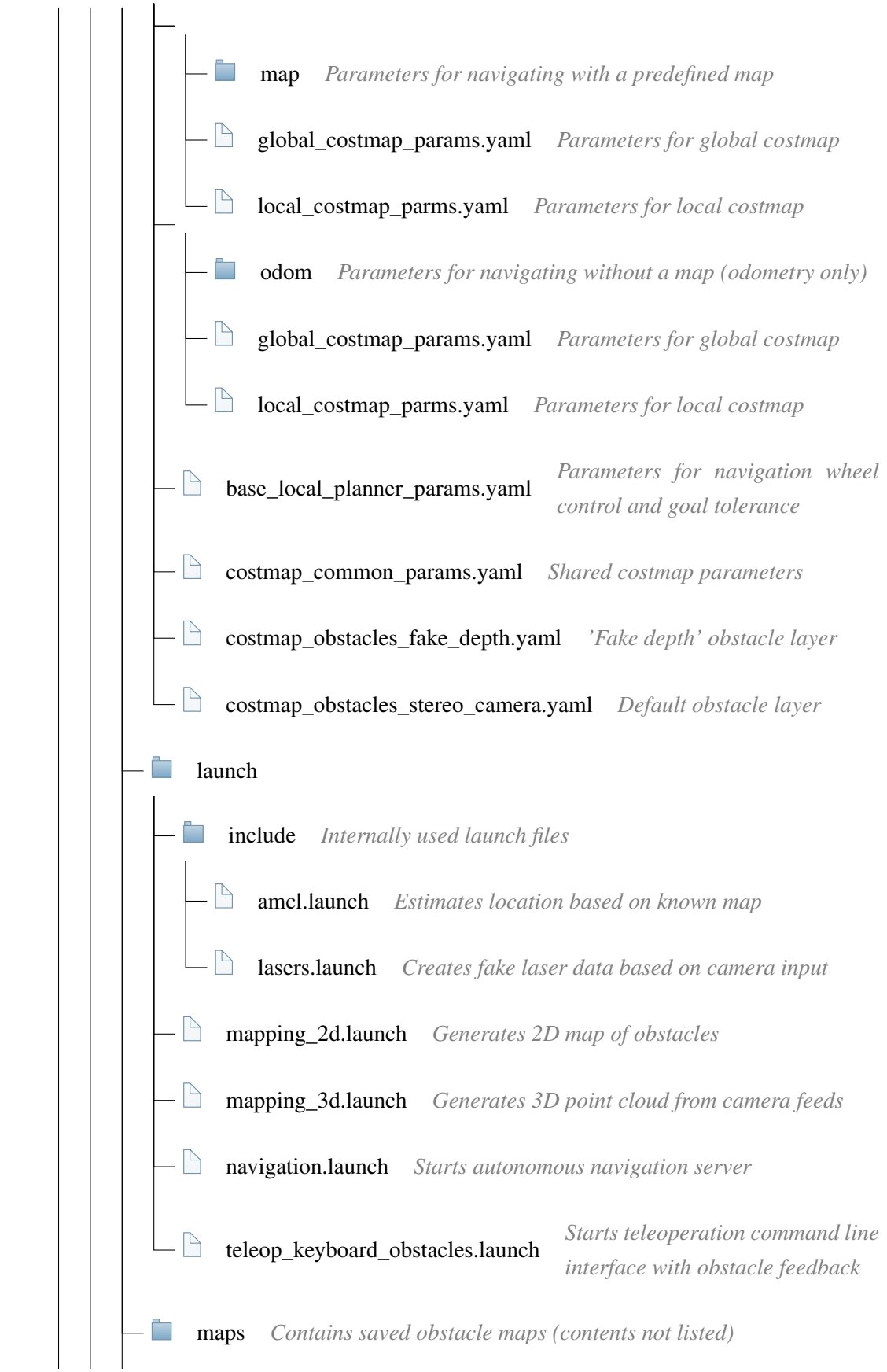

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- scripts
  - obstacles_service.py *Service that returns obstacle blocking status*
  - teleop_keyboard_obstacles.py *Teleoperation code that utilises the obstacle service*
- srv
  - Teleop.srv *Service message for teleoperation*
- test *Unit tests*
  - navigation_test.py *Simple autonomous navigation tests*

- curiosity_mars_rover_viz *Visualisation package*
  - certs *Example security certificates (contents not listed))*
  - launch
    - marsviz_mars_path.launch *Launch entire simulation with MarsViz*
    - marsviz_mars_photo.launch
    - marsviz_mars_terrain.launch
    - marsviz.launch *Launch MarsViz web server*
    - rviz.launch *Launch Rviz with specified configuration*
  - rviz *Rviz configuration files*
    - curiosity_mars_rover_fake_depth.rviz *Alternate Rviz configuration for fake depth cameras*
    - curiosity_mars_rover_lite.rviz *Simple Rviz layout (single-camera)*
    - curiosity_mars_rover.rviz *Default Rviz layout for navigation testing*

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scripts
run_server.py
Creates a simple Python web server to allow access to files across the whole software package
web
Website code for MarsViz
include
Imported JavaScript dependencies (contents not listed)
marsviz
JavaScript code files
arm.js
Code for arm control panel
controls.js
User interface key bindings
marsviz.js
Main MarsViz class
mast.js
Code for mast control panel
nav.js
Autonomous navigation control
teleop.js
Teleoperation with obstacle feedback
models
Compressed environment models (contents not listed)
index.html
Main MarsViz web app page
dependencies
Imported ROS packages (package contents not listed)
ackermann_drive_controller
Package for controlling the rover wheels
hugin_panorama
Package for stitching panoramas
tf2_web_republisher
Package for publishing joint positions to a web server
index.html
Redirects to the MarsViz web app page since the web server starts in the top level directory
install_everything.sh
Installs dependencies and compiles source code