

3D presentations within Coral

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Today

- Prerequisites
- Build a PDF
- Write the YAML file
- Generate simulation files
- Run presentation



marine_presenter requires:

- ROS 2 (hence Ubuntu or similar distribution)
- Coral
 - <https://github.com/oKermorgant/coral>
- slider_publisher
 - `apt install ros-foxy-slider-publisher`
- PDF tools:
 - `pdftotext` to get the titles of the slides
 - `pdftoppm` to convert the pages to images

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PDF can come from:

- Beamer / LaTeX
- Powerpoint or LibreOffice

Videos should not be included in the PDF

Configuration is done through a YAML file with the same name as the PDF

This file contains:

- General informations (default slide pose, slide scale)
- Per-slide info: pose or associated videos
- Additional objects info: relative to slide or global to the environment

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The YAML key for a given slide should be:

- the slide number
- the slide title (tested with LaTeX)

The `pose` sub-key is given in $(t_x, t_y, t_z, \text{roll}, \text{pitch}, \text{yaw})$

- Unless specified, the next slides use the latest given `pose`

The `video` sub-key indicates absolute or relative path to video file

- Sub-key can be `video1`, `video2`, etc. in case of multiple slides with the same title
- Videos can be played from the presentation by using the `pause` button of the remote
- VLC is used in command line to play the videos

Additional objects are given below the `objects` key

- For each object, the key is the name of the URDF file (without extension)
- The `center` sub-key is the object pose
- If a `slide` sub-key is given then the pose is relative to this slide
- Moving along an ellipse
 - If subkeys `rx`, `ry`, `t` are given then the object will follow an ellipse centered on the given frame
 - `rx` and `ry` are the width and depth
 - `t` is the time (in seconds) to do a full orbit
 - If `roll` is given then the object has a roll proportional to its linear velocity
- Moving a joint
 - If the object has revolute joints, then the `joints` sub-key can be given as a list of times to perform a full circle on each of the joints
- All times can be negative to rotate in the other direction

Generating the launch file is done through:

```
ros2 run marine_presenter generate.py <path to PDF file>
```

It will create a folder with the same name as the PDF

Launching is performed with the `presentation_launch.py` from this folder

```
ros2 launch presentation_launch.py
```