3D presentations within Coral

Olivier Kermorgant

Today

CENTRALE NANTES

LS2N
Laboratoire des Sciences
du Numérique de Nantes

- 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-${ROS_DISTRO}-slider-publisher

- PDF tools:
  - pdfinfo
  - pdftotext to get the titles of the slides
  - pdftoppm to convert the pages to images

`marine_presenter` requires:

- ROS 2 (hence Ubuntu or similar distribution)

- Coral
    - https://github.com/oKermorgant/coral

- slider_publisher
    - apt install ros-${ROS_DISTRO}-slider-publisher

- PDF tools:
    - pdfinfo
    - pdftotext to get the titles of the slides
    - pdftoppm to convert the pages to images

`marine_presenter` requires:

- ROS 2 (hence Ubuntu or similar distribution)

- Coral
  - `https://github.com/oKermorgant/coral`

- `slider_publisher`
  - `apt install ros-${ROS_DISTRO}-slider-publisher`

- PDF tools:
  - `pdfinfo`
  - `pdftotext` to get the titles of the slides
  - `pdftoppm` to convert the pages to images

`marine_presenter` requires:

- ROS 2 (hence Ubuntu or similar distribution)

- Coral
  - `https://github.com/oKermorgant/coral`

- slider_publisher
  - apt install ros-${ROS_DISTRO}-slider-publisher

- PDF tools:
  - pdfinfo
  - pdftotext to get the titles of the slides
  - pdftoppm to convert the pages to images

`marine_presenter` requires:

- ROS 2 (hence Ubuntu or similar distribution)

- Coral
  - `https://github.com/oKermorgant/coral`

- `slider_publisher`
  - `apt install ros-${ROS_DISTRO}-slider-publisher`

- PDF tools:
  - `pdfinfo`
  - `pdftotext` to get the titles of the slides
  - `pdftoppm` to convert the pages to images

`marine_presenter` requires:

- ROS 2 (hence Ubuntu or similar distribution)

- Coral
  - `https://github.com/oKermorgant/coral`

- `slider_publisher`
  - `apt install ros-${ROS_DISTRO}-slider-publisher`

- PDF tools:
  - `pdfinfo`
  - `pdftotext` to get the titles of the slides
  - `pdftoppm` to convert the pages to images

`marine_presenter` requires:

- ROS 2 (hence Ubuntu or similar distribution)

- Coral
  - `https://github.com/oKermorgant/coral`

- `slider_publisher`
  - `apt install ros-${ROS_DISTRO}-slider-publisher`

- PDF tools:
  - `pdfinfo`
  - `pdftotext` to get the titles of the slides
  - `pdftoppm` to convert the pages to images

`marine_presenter` requires:

- ROS 2 (hence Ubuntu or similar distribution)

- Coral
  - `https://github.com/oKermorgant/coral`

- `slider_publisher`
  - `apt install ros-${ROS_DISTRO}-slider-publisher`

- PDF tools:
  - `pdfinfo`
  - `pdftotext` to get the titles of the slides
  - `pdftoppm` to convert the pages to images

`marine_presenter` requires:

- ROS 2 (hence Ubuntu or similar distribution)

- Coral
  - `https://github.com/oKermorgant/coral`

- `slider_publisher`
  - `apt install ros-${ROS_DISTRO}-slider-publisher`

- PDF tools:
  - `pdfinfo`
  - `pdftotext` to get the titles of the slides
  - `pdftoppm` to convert the pages to images

`marine_presenter` requires:

- ROS 2 (hence Ubuntu or similar distribution)

- Coral
  - https://github.com/oKermorgant/coral

- `slider_publisher`
  - apt install ros-${ROS_DISTRO}-slider-publisher

- PDF tools:
  - `pdfinfo`
  - `pdftotext` to get the titles of the slides
  - `pdftoppm` to convert the pages to images

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

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

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

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`