NML task audio node

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This ROS2 node is intended for the purpose of adding audio cues to an experimental task. Designed for experiments in the Neuromechatronics Lab at Carnegie Mellon University.

Installation

This node requires the playsound Python package.

The package is built in the manner standard for ROS2 packages.

Parameters and configuration

The mapping between task states and audio samples is specified via ROS2 parameters. All mapping parameters are contained within the `state_map` ROS2 parameter namespace. Each parameter name in this namespace should match the name of a state in the task state machine. The value of each parameter in this namespace should be a filesystem path to an audio file playable by the Python playsound package.

To add new sounds, simply load a new parameter value. This node allows undeclared parameters, so sounds can be added dynamically, and without editing editing the source code.

Example YAML parameter file

```
/audio:
  ros__parameters:
    state_map:
      success: assets/success.wav
      intertrial: assets/trial.wav
```

Example usage

In a ROS2 terminal,[1] run the audio node with the sample parameter configuration file:

```
ros2 run nml_task_audio audio --ros-args --params-file config/audio.yaml
```

In a separate ROS2 terminal, re-load the parameters file, to ensure that undeclared parameters are initialized:

```
ros2 param load /audio config/audio.yaml
```

Finally, simulate a state transition by publishing a message to the task state topic:

```
ros2 topic pub --once /task/state example_interfaces/msg/String "{data: success}"
```

The audio file associated with the success state should play.

[1] That is, a terminal for which ROS2 and the local ROS2 workspace have been sourced.