SqueakR :: CHEAT SHEET

Adding **new data**

1. **Load** an Excel file using :

```
my_file <-
add_timepoint_data(data_path =
"path_to_data", t1 = 2, t2 = 12)
```

2. **Score** the loaded dataset using:

```
my_file <-
score_timepoint_data(data_subset =
my_file, group = "Drug",
experimenter = "My Name")
```

3. **Add** the processed dataset to your experiment object:

```
experiment <-
add_to_experiment(my_file)
```

Save the experiment to a specified directory:

```
experiment <-
save_experiment(experiment =
experiment, save_path = "save-dir")
```

Experiment.**RData**

Your experiment object will be saved to a specified directory using the **save_experiment( )** function.

The file will be saved as an .RData file, and can be loaded into R at any point to continue analysis, or add or remove more data.

Experiment object files can also be loaded into the **SqueakR Dashboard** for visualization.

SqueakR **Pipeline(s)**

```
experiment <- semisqueakRpipeline()
```

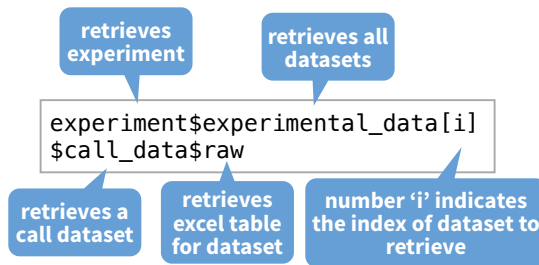creates an experiment by looping through a folder of DeepSqueak data, *prompting the user for each file's metadata*

```
experiment <- autosqueakRpipeline()
```

creates an experiment by looping through a folder of DeepSqueak data, pulling metadata from a *Google Sheet*
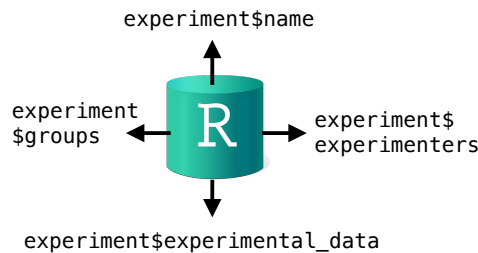
Managing **Experiment**
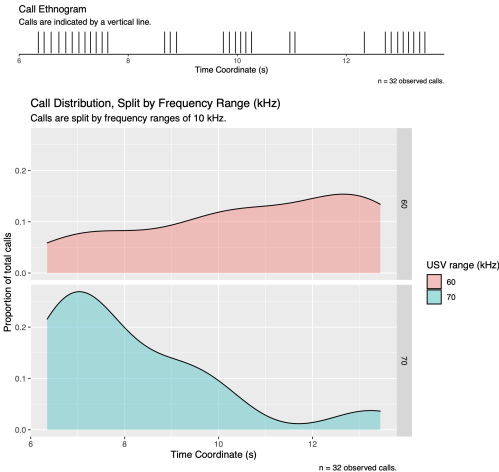
CODE
How to navigate the experiment object:

retrieves experiment

retrieves all datasets

```
experiment$experimental_data[i]
$call_data$raw
```

retrieves a call dataset

retrieves excel table for dataset

number 'i' indicates the index of dataset to retrieve

EXPERIMENT OBJECT

experiment$name

experiment$groups

R

experiment$experimenters

experiment$experimental_data

EXPERIMENT CONTENTS

item	description
name	the name of the experiment
last_saved	the date the object was last saved
groups	the experimental groups
experimenters	the experimenters who collected data
experimental_data	the full dataset of scored data for the experiment

Visualizations

Graphs which can be generated using SqueakR:

Call Ethnogram
Calls are indicated by a vertical line.
Time Coordinate (s)
n = 32 observed calls.

Call Distribution, Split by Frequency Range (kHz)
Calls are split by frequency ranges of 10 kHz.
Proportion of total calls
Time Coordinate (s)
USV range (kHz)
60
70
n = 32 observed calls.

SqueakR **Dashboard**

A Shiny dashboard for visualizing and conducting data analysis without any code!

Learning SqueakR

DOWNLOAD AND INSTALLATION

To install the package, run the following in RStudio:

```
install.packages("SqueakR")
library(SqueakR)
```

SQUEAKR ON SWIRL

SqueakR can be learned on Swirl! Learn more about using Swirl to interactively learn about SqueakR directly from the RStudio console on the SqueakR on Swirl repository.

Alternatively, you can check the SqueakR website for extended documentation.

SqueakR : : CHEAT SHEET

SqueakR : : Workflow

How to use the SqueakR Dashboard for your experiment:

1. Collect data using a recording software capable of making **.WAV**, **.FLAC**, or **.UVD** audio files.

2. **Detect calls** in the audio files using DeepSqueak (the wiki on how to use the software can be found [here](#)). Analysis can be based on either automated or manual review.

3. **Export the detected call files** as Excel documents to a folder containing all of your experimental data.

4. **Run a SqueakR pipeline** to semi-automatically or fully-automatically generate your experiment .RData file.

5. **Load** your experiment into the **SqueakR Dashboard** to visualize and analyze your experiment in a Shiny interface, without any coding required. Data can also be plotted directly into RStudio without the interface, using SqueakR functions.

Name	Type	Value
experiment	list [5]	List of length 5
name	character [1]	'Example experiment'
last_saved	double (S3: POSIXct, POSIXt)	2022-06-17 10:45:14
groups	character [2]	'AD' 'BC'
experimenters	character [3]	'SO' 'MA' 'AL'
experimental_data	list [4]	List of length 4
call_data	list [14]	List of length 14
call_data	list [14]	List of length 14
call_data	list [14]	List of length 14
call_data	list [14]	List of length 14

```
> describe_experiment(experiment)
Experimental name: Example experiment
Last saved: 2022-06-17 10:45:14
Experimenters: SO, MA, AL
Experimental groups: AD, BC
Total call datapoints: 4
Data for AD: 2
Data for BC: 2
>
```

Workflow **Diagram**

SqueakR Workflow

- Record data for experimental groups
- (Optional) Enter data fila metadata in Google sheets (if using fully-automatic pipeline)
- Use SqueakR to pre-plot exported files as standard ethnograms (Ensuring the appropriate timepoints were selected for analysis)
- Detect calls in audio files using DeepSqueak
- Syntax analysis and call classification
- Create experiment using SqueakR and loading data (automatically or semi-automatically) using pipeline. Save experiment locally or on cloud server
- Load experiment object into RStudio using, plotting visualizations if necessary (either using code in the console, or from the SqueakR Dashboard, without code)
- Inspecting experiment for outliers
- Analyzing call feat-ures between groups (Dashboard or code)
- Export plots for sharing tentative results
- Results!

SqueakR **Website**

https://osimon81.github.io/SqueakR