GAVDNet Adjudicator V1.0

User Manual

Overview

The GAVDNet Adjudicator is a standalone MATLAB application for validating disagreements between the detections returned by the automated call detector GAVDNet, and ground truth annotations. It is to be used in cases where the ground truth dataset annotations used to benchmark the detector are unreliable.

The adjudicator's task is to inspect spectrograms for the audio that the detector and ground truth disagree on and decide whether the spectrogram shows the whale song of interest.

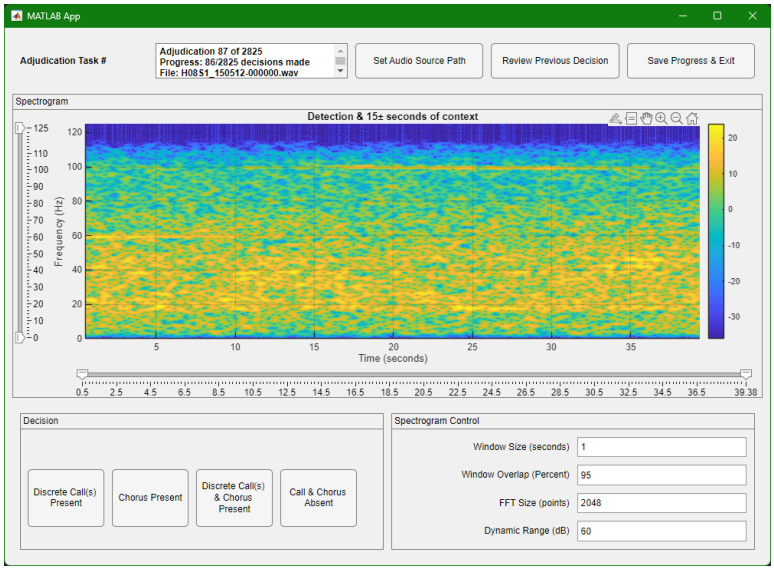
Installation

1. Verify that MATLAB Runtime(R2024b) is installed. If it is not, download and install the Windows version of the MATLAB Runtime for R2024b from the following link on the MathWorks website:

   https://www.mathworks.com/products/compiler/mcr/index.html

2. Make sure that the "TestSubset" folder is in the same directory as the "disagreements" file and the "GAVDNetAdjudicator.exe" file.

Main Display



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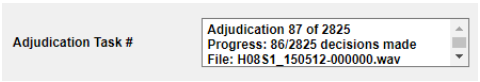
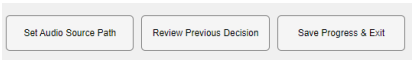
Adjudication Task Display Panel

- Current Task: e.g. Task 1 of 10
- Progress Counter: Displays how many decisions have been completed
- File Name: The name of the audio file being reviewed



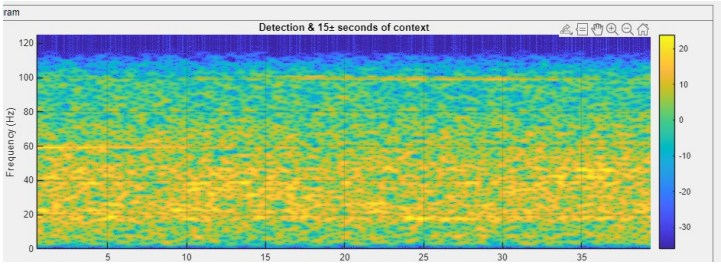
Navigation Controls

- Set Audio Source Path: reset the path to the audio. If you set the path correctly at the beginning of the session, you shouldn't need this.
- Review Previous Decision: Go back to the previous disagreement to review or change your decision
- Save Progress & Exit: Save your work and close the application. Decisions are saved in the disagreements .mat file.



Spectrogram Display Panel

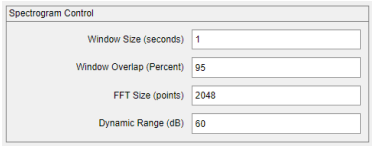
The main spectrogram display shows a spectrogram of the audio around the detection call. In theory, the detection will be centred in the spectrogram, with 15 seconds of the signal before and after the detection also displayed for context. In practice though, the call detection could be more towards the start or end of the spectrogram. The colour scale represents power in decibels.



Spectrogram Control Panel

Adjust these settings to better visualize the data:

- Window Size (seconds): Length of analysis window (default: 0.8s)
- Window Overlap (percent of window): Overlap between windows (default: 95%)
- FFT Size (points): Frequency resolution (default: 2048)
- Dynamic Range (dB): Colour scale range (default: 80 dB)



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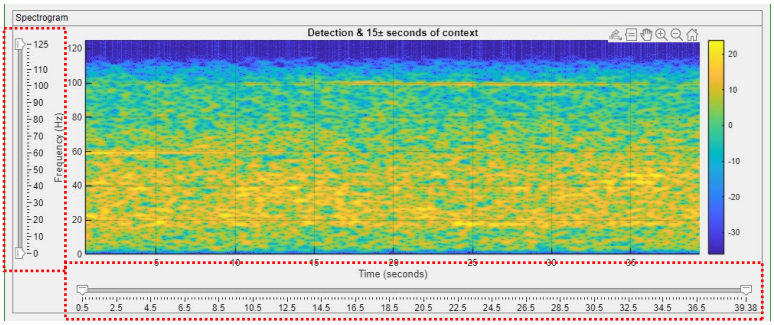
Spectrogram Zoom Controls

Zoom on the time and frequency axes of the spectrogram display are controlled via the slider handles. Sliding the max and min sliders will adjust zoom and the visible range.

The range of colours in the spectrogram automatically adjust based on the frequency axis zoom. When you zoom in on a specific frequency range using the vertical slider, the colour scale recalculates to use only the spectrogram data within the frequency range being displayed. This means the brightest colours (yellow) will always represent the highest power levels *currently visible* on the display. This ensures that the dynamic range control is correctly applied, displaying the relevant region of the spectrogram with maximum contrast. Without this automatic colour scaling, subtle shapes in the spectrogram are easily washed out by higher-power regions outside the frequency range we are interested in.



Getting Started

Launching the Application

1. Run Adjudicator.exe
2. The app will open a file selection dialogue box, asking you to load the disagreements file. This will have a file name like “detector_vs_GT_disagreements_30-May-2025_07-38-49.mat”.
3. The app will open a folder selection dialogue box, asking you to show it the folder where the test audio is. This folder will have a name like “TestSubset”.

Set up the Spectrogram

Once the first spectrogram displays, set up the spectrogram display. The default spectrogram window size, overlap and FFT length should be appropriate for most baleen whale songs. You will likely play with the dynamic range setting to better visualise detections with varying SNRs. Zoom the frequency range in to show the bandwidth of interest, something a little wider than the range occupied by the target call. For example, for an Antarctic Blue Z call, which contains energy in the 30 - 15 Hz range, recommended frequency zoom settings are 5 to 50. Setting the range a little wider than the call’s actual bandwidth allows easier discrimination between chorus and broadband noise. Note that the zoom settings are persistent within a session, but will reset when you close and re-launch the app.

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Making Decisions

Inspect the spectrogram, experimenting with dynamic range to reveal low SNR calls. Remember that the call could be anywhere in the time region displayed. Refer to the “Adjudication Reference” file, which contains spectrograms that illustrate the call of interest. Choose the option that best describes what you observe in the spectrogram:

Decision Button	**When To Use:**
Discrete Call(s) Present	Individual whale calls (or parts thereof) are visible.
Chorus Present	Multiple, overlapping calls/reverberation/multipath reflections creating an indistinct horizontal band of energy that has the same frequency bandwidth as the call of interest. Resembles band-limited noise.
Discrete Call(s) & Chorus Present	Both discrete calls (or parts of calls) AND chorus are visible.
Calls & Chorus Absent	No features resembling discrete calls, parts of calls, or chorus are visible. The spectrogram shows only noise, other extraneous (non-target) sounds, or silence.

Remember to use the **"Review Previous Decision"** button if you think you have made an error.

Data Management

- Save progress regularly using **"Save Progress & Exit"**
- The app automatically tracks your position and resumes where you left off
- All decisions are saved to the original “disagreements” data file
- Upon completion of the adjudication, please return this “disagreements” file.

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