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GUIRO'S SPECTROGRAM QUIZ

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QUIZ ACTIVITY

Visualising Vocal Sound using Spectrogram Technology

Designed for the Presto project by Dr Barbara Dignam

Dublin City University, 2023

QUIZ

Welcome to Guiro's Spectrogram Quiz!

Hello, Guiro here!

Have you watched our introductory video 1. Introduction to Spectrograms?
Have you downloaded our user guide *Getting Started with Spectrograms?*

If yes, then why not take my Spectrogram Quiz below and test yourself on how much you remember about spectrograms! Don't worry, I haven't included any sneaky questions and the answers are provided at the end.

Are you ready? Okay, let's go!

TICK ONE ANSWER FOR EACH QUESTION BELOW.

SONIC VISUALISER

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1. Spectrograms measure pitches in frequency values called…?

    ○   Decibels?

    ○   Hertz?

    ○   Metres per second?

2. Spectrograms display sound in a graph-like form. Where are pitches displayed?

    ○   Along the bottom of the screen

    ○   They pop-up when the screen is clicked

    ○   Vertically on the left of the screen

3. Some colours are brighter and more intense than others. What does this indicate?

    ○   Areas of greater resonance within a sound

    ○   Areas where the sound is quiet

    ○   That's just the colour of the spectrogram

4. True or False? Sounds can be recorded directly into Sonic Visualiser.

    ○   True

    ○   False

5. I have a recorded sound on my laptop that I want to use. How do I open it?

    ○   Go to the File Menu, click on Open, and find the file on your computer

    ○   Find the file on your computer, Right-click/Ctrl-click the file and choose 'Open with Sonic Visualiser'

    ○   Both of the above

6. What is an Audio Waveform?

○   A graphical representation of colour

○   A graphical representation of sound

○   Neither of the above

7. True or False? Only one audio file or spectrogram can be viewed at a time in Sonic Visualiser.

○   True

○   False

8. A user can highlight more detail on a spectrogram using...?

○   Zoom Wheels

○   Settings in the Spectrogram Tab

○   Both of the above

9. True or False? Spectrogram images cannot be viewed outside the Sonic Visualiser application, e.g. in slides in a printed format

○   True

○   False

10. I have recorded myself singing a note into Sonic Visualiser. A series of coloured horizontal lines stacked on top of one another has appeared on the spectrogram image. These indicate....?

○   The individual frequencies that make up the note I have sung (harmonics/overtones)

○   Areas of greater and lesser amplitude (perceived loudness) and resonance within the note I have sung

○   Both of the above

Answers

1. The correct answer is **Hertz.**
   Pitch frequencies are measured in units per second called Hertz (Hz).

2. The correct answer is **Vertically on the left of the screen.**
   Pitch frequencies are displayed in Hertz frequency values along the X-axis of the spectrogram, so vertically on the left of the screen. Pitch increases and the numbers increase.

3. The correct answer is **Areas of greater resonance within a sound.**
   The areas of greater resonance within a sound will display as brighter colours on the spectrogram. Even when a sound is quiet, it can still contain differences in intensity values and resonance.

4. The correct answer is **True.**
   Users can record directly into Sonic Visualser using the Record function:

5. The corrects answer is **Both of the above.**
   You can open various types of audio files (.wav, .mp3, .aiff) in Sonic Visualiser by going to the File Menu, clicking Open, and finding the file on your computer. You can also Right-click/ Ctrl-click and choose 'Open with Sonic Visualiser'.

6. The corrects answer is **A graphical representation of sound.**
   An Audio waveform is a graphic representation of sound and displays changes in amplitude (perceived loudness) of the wave over time.

7. The correct answer is **False.**
   Two audio files or spectrograms can be viewed simultaneously. Both will play back at the same time but this can be changed by selecting which pane to play. See our Getting Started with Spectrograms resource for more information.

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8. The correct answer is **Both of the above**.
   Zoom Wheels make spectrogram images bigger or smaller to help display more detail. Various settings in the Spectrogram Tab found in the Property Boxes on the top right of the screen provide additional tools for sharpening images and highlighting detail. See our Getting Started with Spectrograms resource for more information.

9. The correct answer is **False**.
   Audio files can be converted to a spectrogram image and exported out as both an audio file (.wav format) and an image file (.png). See our Getting Started with Spectrograms resource for more information.

10. The correct answers is **Both of the above**.
    The horizontal lines appearing on spectrograms illustrate the frequencies of harmonics/overtones that make up the sung note recorded by the application. The difference in colour intensity of these lines illustrates whether each harmonic/overtone is more or less resonant.

Congratulations on completing my spectrogram quiz!
I hope you've learned a lot and are looking forward to uncovering more of how spectrograms can help support you, your choral singers and students. Want to know more? Take a look at other concepts covered in our suite of interactive multimedia resources and activities.
Have fun exploring!
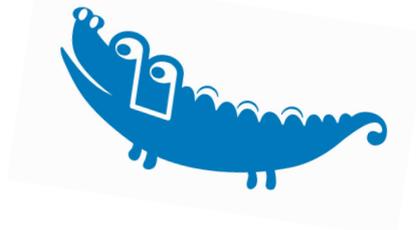
Guiro's Spectrogram Quiz

Designed & produced by: Dr Barbara Dignam
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This activity and game have been designed and produced as a resource for the **Visualising Vocal Sound using Spectrogram Technology** element of the **PRESTO** project, kodaly.hu/presto.

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Reference:
Chris Cannam, Christian Landone, and Mark Sandler, *Sonic Visualiser: An Open Source Application for Viewing, Analysing, and Annotating Music Audio Files*, in Proceedings of the ACM Multimedia 2010 International Conference.

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