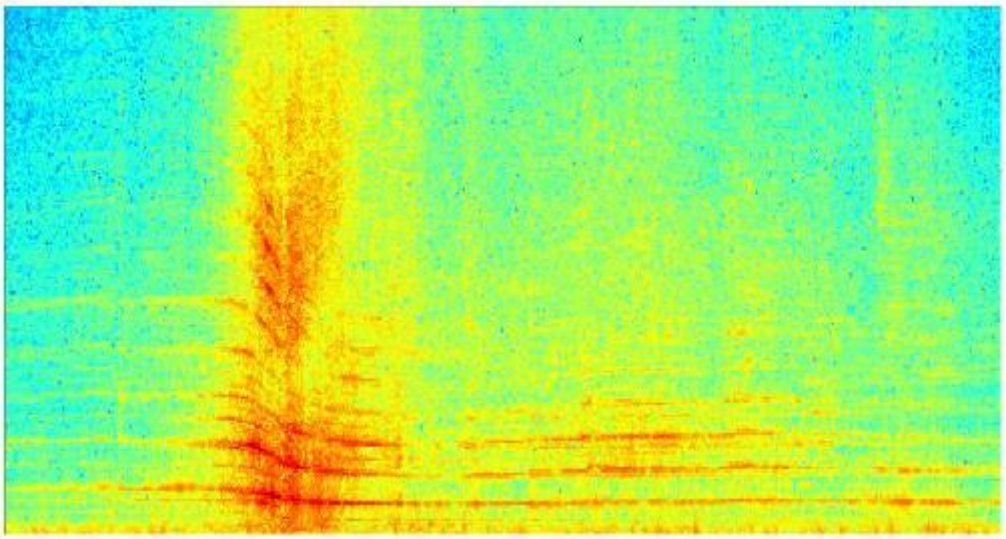
Homework Assignment:

1. Spectrogram Analysis
    a. Download 'HW4_spect.wav' from Moodle and read it into Matlab.
    b. Plot the spectrogram of the wave form in dB. Play around with the record length and percent overlap until you get something that matches the figure below:



    c. What acoustic event is the spectrogram depicting? What does each curve on the spectrogram represent?
    d. To learn about the phenomenon occurring in the .wav file, go to https://goo.gl/cCLLiz.
        i. Find f_high and f_low, and calculate v.
        ii. Bonus: What is the error on v? Can you improve this?

Homework Assignment:

2. Pulse in Noise Revisited

   (Make sure to complete the exercise on page 1-15 of the notes before completing this assignment)

   a. Read the 'HW3_pulsenoise.wav' file into Matlab.
   b. For Part b, pretend that you were not given the 'HW3_pulse.wav' file. You know that some sort of repeated pulse is present in the noise, but you do not know the length of the pulse or the number of times the pulse was repeated in the noise. Using auto-correlation, find the length of the pulse and the number of averages (and plot your results).
   c. Now read the 'HW3_pulse.wav' file into Matlab.
   d. What was the distance between the speaker and the microphone? Be sure to include your method for reaching this conclusion (i.e. plot your results).