Learning to code through MIR

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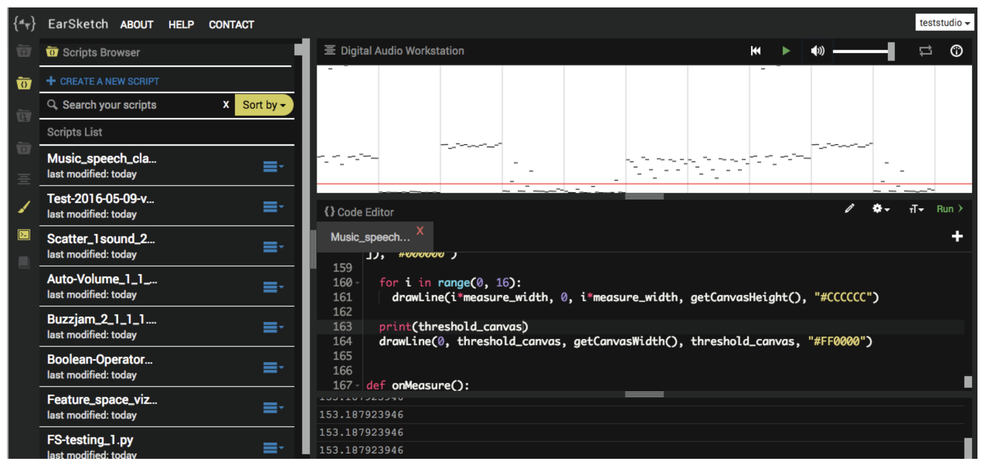
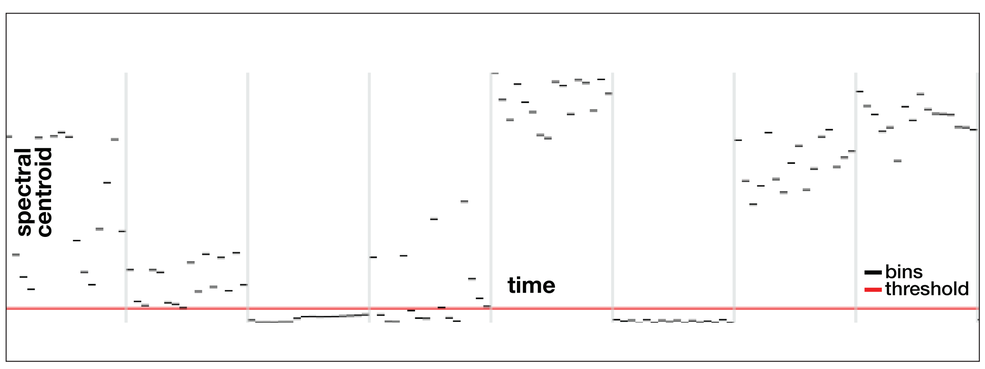


Abstract. In this demonstration we present the potential of teaching music information retrieval (MIR) concepts using EarSketch. The aim is twofold:
– To discuss the benefits of introducing MIR concepts in the classroom.
– To shed light on how MIR concepts can be gently introduced in a CS curriculum.

Exercise 1 – A binary thresholding classifier

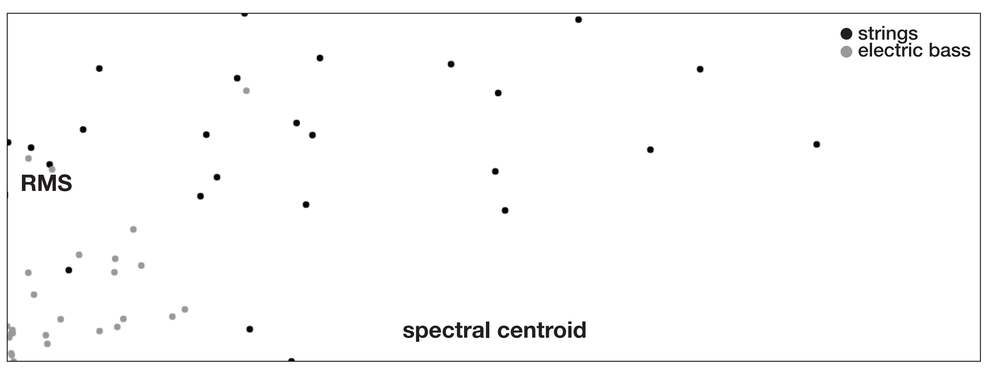
The value of one feature is plotted over time and the student attempts (by adjusting a threshold) to differentiate between two signal types alternating in a track.



Learning outcomes:
– Basic knowledge of signal properties and how they can be modeled by simple features extracted block-by-block.
– Understanding the concept of a simple binary classifier.
– Familiarity with the concept of systematic evaluation by counting true positives and false positives.

Exercise 2 – Feature space visualization

The audio clips of two different contrasting audio categories are represented by two-dimensional feature vectors and visualized in a scatter plot.



Learning outcomes:
– Understanding the concept of information reduction by feature aggregation.
– Understanding of scatter plots and general concepts of data visualization.
– Basic understanding of feature space, distances, and multi-dimensionality.

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