Vuvuzela project guidelines

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Abstract

This document outlines the Vuvuzela project guidelines

1 Main objective

Filters can be used for a variety of reasons (filter noise, detect quick changes in a system...). In this project, we'll look into filtering a musical instrument's sound to emphasize a commentator's speech. We'll try different ways to do that (different types of **bandstop** filters) and will evaluate their shortcomings.

2 Setup

- Project handout:
  - lab handout
  - vuvuzela sound file
- Groups of 2
- One experimental procedure per group member
- Report in the form of jupyter notebook
- First session supervised
- Second session UC1 supervised, UC2 unsupervised
- Last session UC1 unsupervised, UC2 supervised

3 Jupyter notebook

- Project due on **December 18th 2020**
- Report should be in **English**
- There should be an **introduction** and a **conclusion**.
  1. General introduction on filters and why they are important

2. Specific introduction on what will be done in the project
3. Conclusion. Were we able to do what we set ourselves out to do? Did we encounter any problems with the different filters and how were they fixed?

- Organize your folders properly (one folder for pictures, one folder for sounds etc)

4 Experimental and optional questions

For experimental procedures, we'll see how we set this up:

1. Describe and perform the procedure to measure the inductor's internal resistance R_{int} in the RLC filter (one group member should do this)
2. Describe and perform the procedure to find the damping ratio m in the RC-RC filter (the other group member should do this)
3. Assemble all filter blocks for the active Twin-T. Make sure you put a feedback filter between each of them to not lose in gain.

For the bonus question, just indicate if the signal looks stationary or non-stationary