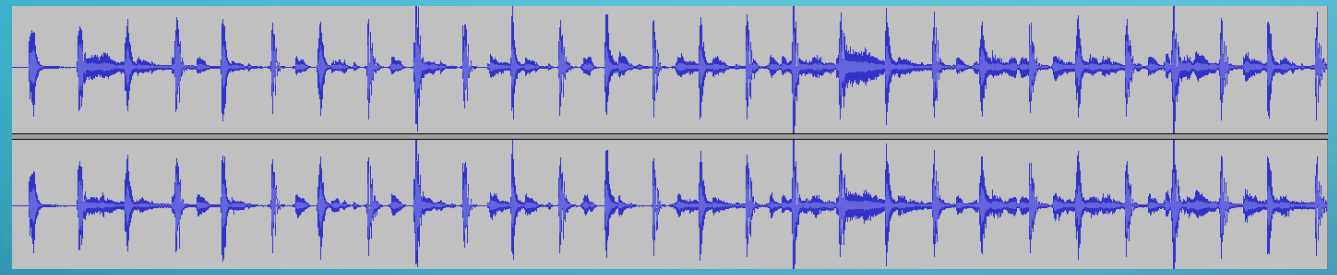
SONOTONE
MULTIMEDIA PROJECT IN RICM4



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VOUTAT MANUEL

INTRODUCTION

- *Eponym of the firm « Sonotone » created in the beginning of the 1930th*
- *Allows to amplify given frequencies from 0 dB to 20 dB*
- *Our project :*
  - *Enables a user to configure his audioprosthesis*
  - *Apply different filters on real-time signal*

SPECIFICATIONS

- Apply the filters on a real-time signal
  - Reduce the delay beetween the microphone and the earphone
- Ability to apply any filter the user wants at the right frequencies
- The GUI can be used by a beginner as well as an advanced user with the advanced options

OBJECTIVES

Developing with prototype patterns :

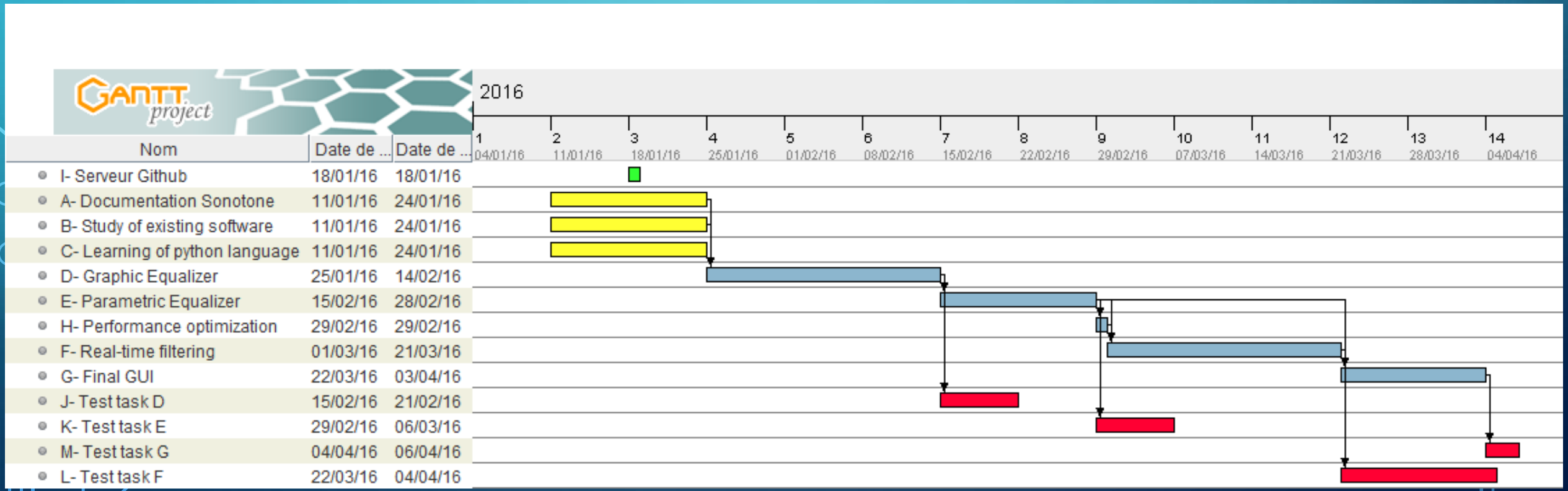
- Study of signal processing and functionning of a audioprothesis
- Band Equalizer
- Parametric Equalizer
- Real time filtering
- GUI

TOOLS

- Development in python language
- NUMPY and SCYPI modules
- PyAudio for real-time processing
- Audacity for analysing the audio signals
- Tkinter for GUI environnement

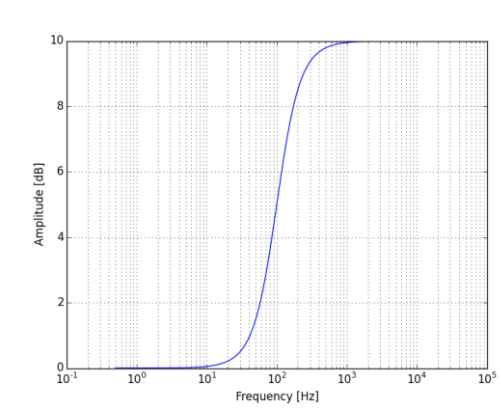
ORGANIZATION

- Prototype pattern.

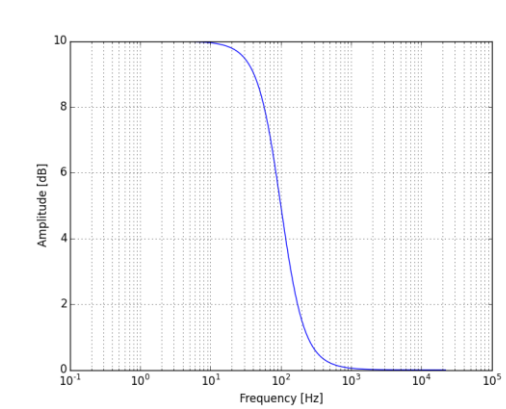


Nom	Date de ...	Date de ...
I- Serveur Github	18/01/16	18/01/16
A- Documentation Sonotone	11/01/16	24/01/16
B- Study of existing software	11/01/16	24/01/16
C- Learning of python language	11/01/16	24/01/16
D- Graphic Equalizer	25/01/16	14/02/16
E- Parametric Equalizer	15/02/16	28/02/16
H- Performance optimization	29/02/16	29/02/16
F- Real-time filtering	01/03/16	21/03/16
G- Final GUI	22/03/16	03/04/16
J- Test task D	15/02/16	21/02/16
K- Test task E	29/02/16	06/03/16
M- Test task G	04/04/16	06/04/16
L- Test task F	22/03/16	04/04/16

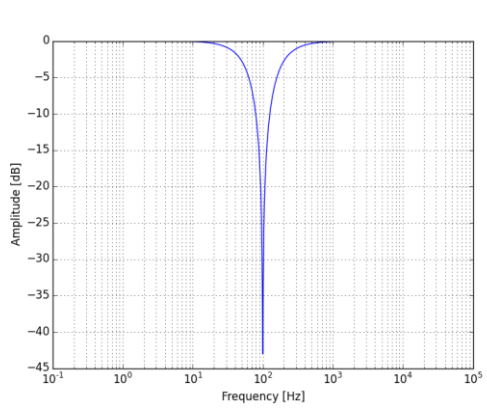
THE FILTERS IMPLEMENTED AT 100HZ



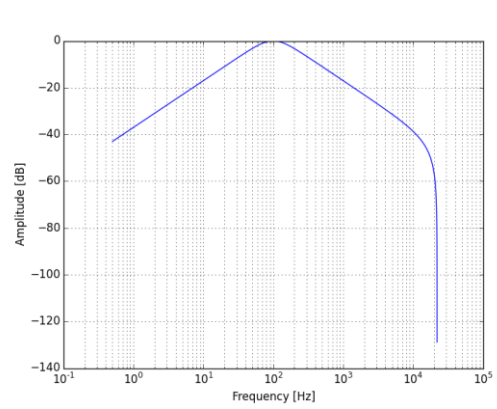
High Shelf



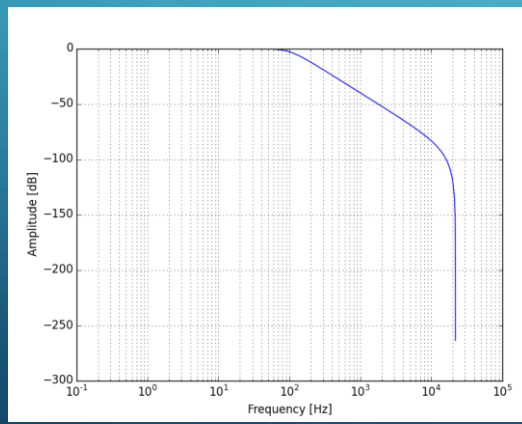
Low Shelf



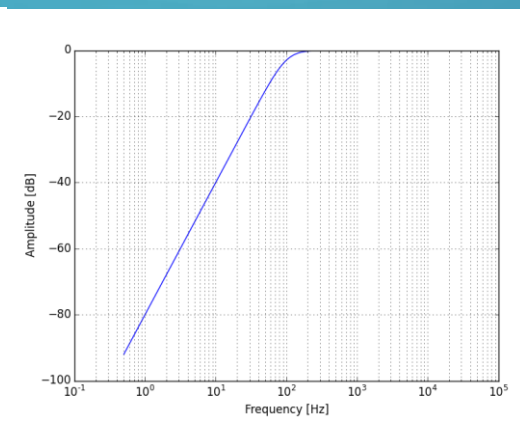
Notch



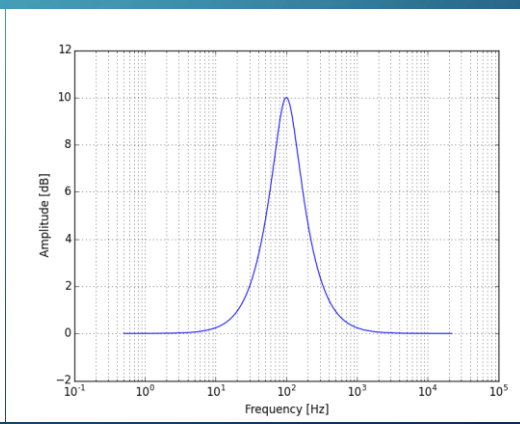
Bandpass



Lowpass



Highpass



Peaking

PROBLEMS ENCOUNTERED

- Apply our theoretical knowledge of a numerical processing
- GUI : Giving up Kivy over Tkinter
- Convert data from the C module to python data we can use in the equalizer
- Interference

DEMONSTRATION

THANK YOU FOR YOUR ATTENTION