

**Computer music**  
**MODR/human/Itec 2655**  
 Open-Book & Open-Internet

We wish to slow down/speed up music tempo (of a piano performance) by computer algorithms.

## Contents

|            |  |   |
|------------|--|---|
| Question 1 | Change tempo .....   | 1 |
| [1]        | Change tempo of a music video.....                                       | 1 |
| [2]        | Display your slow video (format mp4) at:.....                            | 2 |
| [3]        | Also display your slower music as a web page (use video embed) at: ..... | 2 |
| Question 2 | One more exercise on “changing tempo” for music videos.....              | 2 |

**Suggestion:** You may want to view [the video](#) given in Question 2 first.

### Question 1    Change [tempo](#)

[1]    Change tempo of a music video.

(i)    Audacity is an audio editor while Avidemux is a video editor

(ii)   We need to process audio and video tracks separately, and then put them back together to achieve perfect synchronization which is required in music education.

- a.    To speed up/slow down audio, use the "[bpm or beats per minute](#)" **effect** in Audacity.
- b.    To speed up/slow down video, use "**fps** or frames per second" **filter** in Avidemux

(iii)   For AVIDEMUX:

**Change FPS** = change duration of video.

**Resample FPS** = change and enforce FPS. Keep duration and sync.

(iv)   For Audacity:

**Change BPM** = change duration of audio

We can download and install Avidemux and Audacity at your local device

at: <http://oldtown.glendon.yorku.ca/~teaching/binary/>

**Itec/MODR/HUMA 2655**

- You can **also** use [Audacity](#) and [Avidemux](#) on-line as **chrome** extension plugins.

Given the video at: [http://oldtown.glendon.yorku.ca/~teaching/2021/videos/imagine\\_2020.mp4](http://oldtown.glendon.yorku.ca/~teaching/2021/videos/imagine_2020.mp4)

that plays “Imagine” by Lennon at tempo.

Create a new video, named `slow.mp4`, which plays at 90% tempo of the video above. Here is a screen capture of [the output video format](#) suitable for streaming.

[2] Display your slow video ([format mp4](#)) at:

<http://oldtown.glendon.yorku.ca/~lastname/video/lennon/slow90.mp4>

[3] Also display your slower music as a web page (use video embed) at:

<http://oldtown.glendon.yorku.ca/~lastname/video/lennon/imagine.html>

## Question 2 One more exercise on “changing tempo” for music videos.

View the video [here](#).

Please describe the steps taken and its purpose.