MIDI Command Controller Interface

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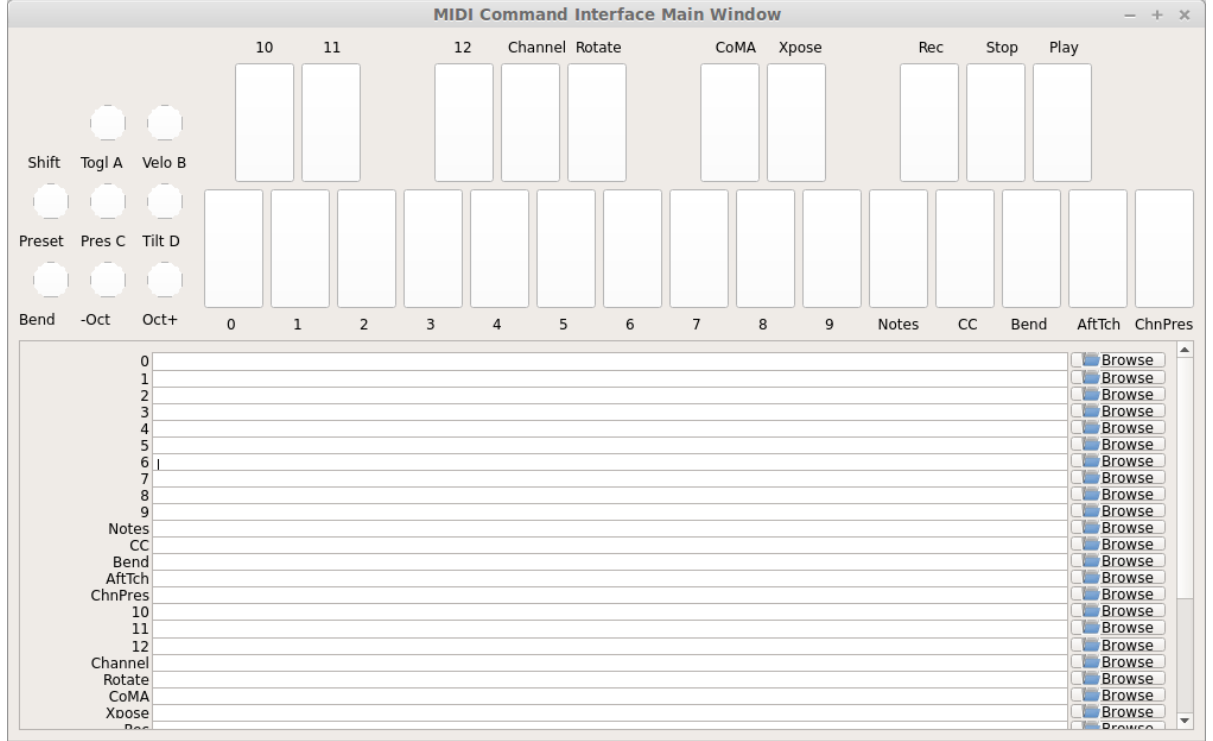
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Contents

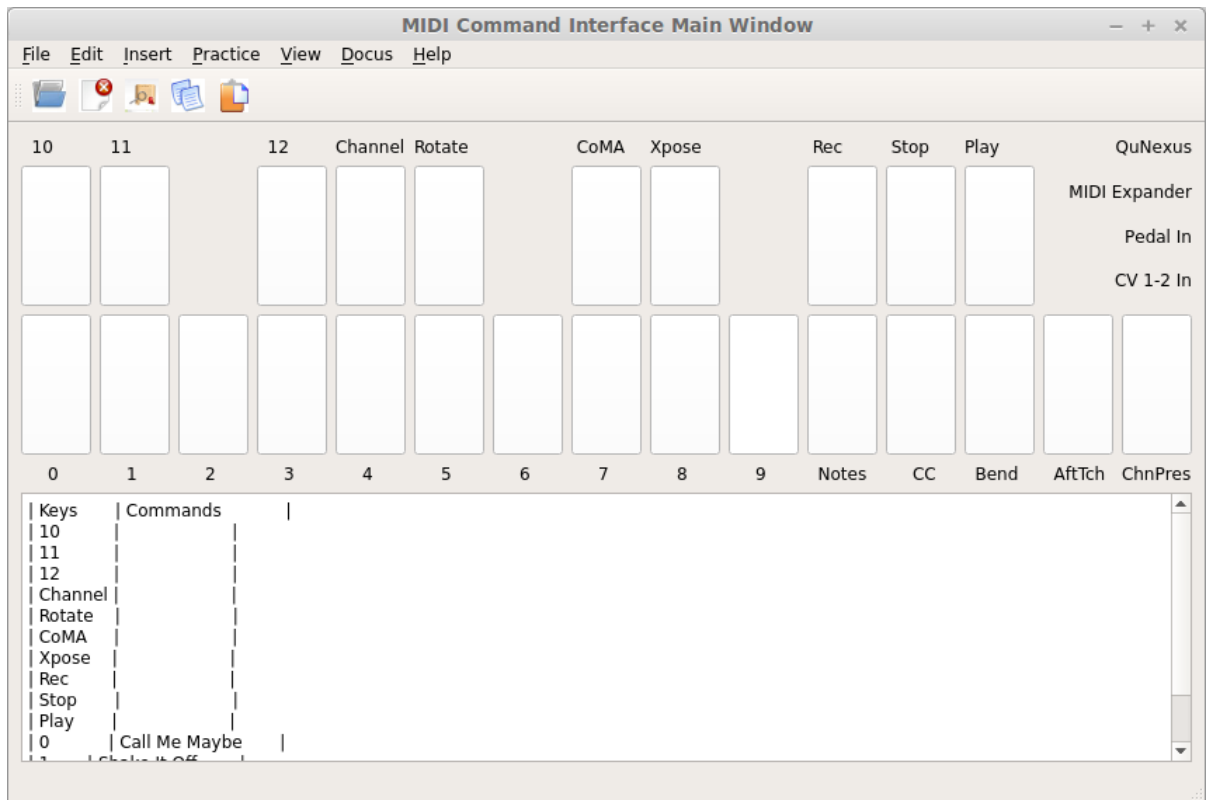## 1 Update 11/23/2014, updates include

- Cleaned repository so that it looks clean and nice;

- Remove menubar as suggested by advisor;

- Removed topright four line texts cause it's not necessary;

- Shifted top line keys so that they look like original midi controller layout;

- Changed PlainTextEdit so that they satifies the requirements;

- Added left side 8 keys, just that three keys **Bend**, **-Oct**, **Oct+** are **NOT** like the original shapes yet, need work on them later on;

- Will link possible functionalities to make it a functional softwares first, and then updates minus issues.

- Current layout looks as below snapshotted:

10 11 12 Channel Rotate CoMA Xpose Rec Stop Play

Shift Togl A Velo B

Preset Pres C Tilt D

Bend -Oct Oct+ 0 1 2 3 4 5 6 7 8 9 Notes CC Bend AftTch ChnPres

0 | Browse
1 | Browse
2 | Browse
3 | Browse
4 | Browse
5 | Browse
6 | Browse
7 | Browse
8 | Browse
9 | Browse
Notes | Browse
CC | Browse
Bend | Browse
AftTch | Browse
ChnPres | Browse
10 | Browse
11 | Browse
12 | Browse
Channel | Browse
Rotate | Browse
CoMA | Browse
Xpose | Browse
Rec | Browse

2 Review 11/21/2014, updates include

2.1 Review Contents

- Created most basic interface for the client, and reviewed with course instructor.

- Demo the most basic interface to him, and get corresponding specific requirements as listed followed.

File Edit Insert Practice View Docus Help

10 11 12 Channel Rotate CoMA Xpose Rec Stop Play QuNexus

MIDI Expander

Pedal In

CV 1-2 In

0 1 2 3 4 5 6 7 8 9 Notes CC Bend AftTch ChnPres

Keys	Commands
10	
11	
12	
Channel	
Rotate	
CoMA	
Xpose	
Rec	
Stop	
Play	
0	Call Me Maybe

2.2 Detailed Requirements

- menubar is NOT necessary, and could be removed away;

- Interface topright four line texts are not necessary, could be removed away;

- Interface top line keys should shift to the right by half key width so that the interface looks similar to the original midi controller keyboard;

- PlainTextEdit should be changed to be array of 25/33 lines of (text label, file name editor, browse QPushButton keys) layout;

- Left handside 8 keys should be included in the midi interface even functionalities are not required at this moment;

- When finished the above basic ones, if I have extra time, could explore the left side 8 keys to test if it is possible to use them to set a bunch of sequence so that save time when needed compared with set sequence one by one from the basic 25 keys.

3 Project Requirements

- Use QuNexus Midi controller as a command controller to manipulate play sequence for tower lights show;

- Besides the main functionalities, create a Qt Creator Interface to help facilate the tower light playing process for clients convenience.

4 main functionality

4.1 Read data from MIDI

- Use the MIDI Controller as a speical Controller that can be operated to play specific songs sequence, or do some specific work.

- play specific sequence may be the work for keys 0-9, and 10-12, how about other 20 keys? Do they require specific work to be done?

4.2 Write data back to MIDI

- When a key was pushed, the specific Controller key's LED is supposed to be on to indicate the operation.

- Trick about the LED to be continuously on is that when a key is pressed, that is 1 byte that indicates the "Duration" of the key press, I may need to

  - try to set this byte to be a large value, (1 byte, $2^8 = 256$, it has limits!)
  - or continuously reset is to be that large value;
  - or continuously write this key to be pressed data back to MIDI with time intervals

5 Programming Language

5.1 Qt

- the worries that I have by using Qt is that if Qt has the capability to handle the MIDI-Linux connection problems.

- And also Qt-to-Audio (linux) connection things as well. Should it be Qt, or as far as I can set it to work in Linux, just let it be that way then?

5.2 c++

- I believe C++ is the most widely used Language used by those midi sequencer softwares, so I have no better choice than c++ right now.

6 Interface Design
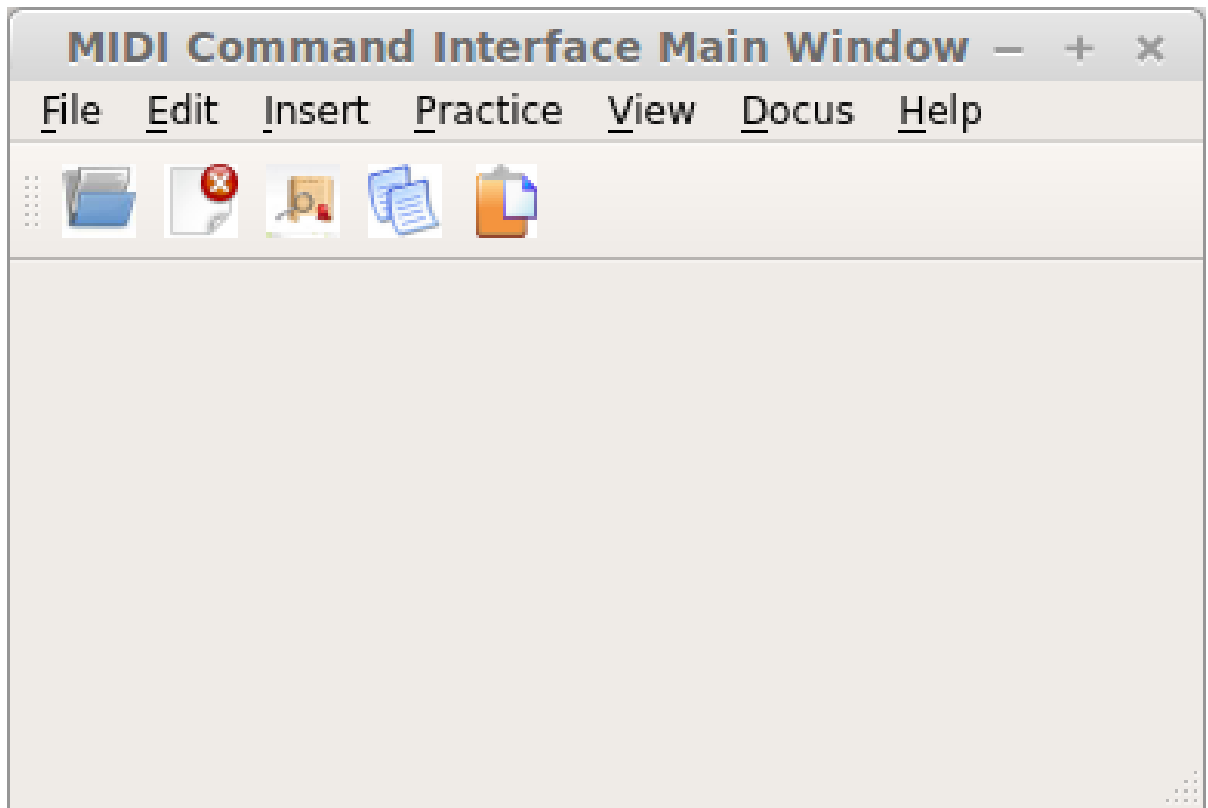
7 Midi keys and corresponded operations

8 Interface Guide

- Give text instructions on how to use the Interface, and what are the corresponded operations by press specific keys.

- Like list the above table in the Interface Guide text area.

9 References

- For circle QPushButton

  http://stackoverflow.com/questions/12734319/change-rectangular-qt-button-to-round

- Draw circle separate

Table 1: midi keys and corresponded operations

Keys	Commands
10	
11	
12	
channel	
Rotate	
CoMA	
Xpose	
Rec	
Stop	
Play	
0	Call Me Maybe
1	Shake It Off
2	All About That Bass
3	...
4	
5	
6	
7	
8	
9	
Notes:	
CC	
Bend	
AftTch	
ChnPres	
Togl A	
Velo B	
Preset	
Pres C	
Tilt D	
Bend	
Oct-	
Oct+	

<https://coderalbert.wordpress.com/2014/03/16/creating-circle-in-linux-using-qt-creator/>

- For Rectangle Arc

  <http://stackoverflow.com/questions/20416789/how-to-add-a-small-triangle-at-one-of-the-corn>

- PaintEvent Triangle

  <http://stackoverflow.com/questions/20416789/how-to-add-a-small-triangle-at-one-of-the-corn>

  <http://stackoverflow.com/questions/3894737/qt4-how-to-draw-inside-a-widget>

  <http://qt-project.org/forums/viewthread/1623>

  <http://stackoverflow.com/questions/7968269/basic-qt-gui-qpushbutton-for-drawing-a-line>

- QPushButton::drawButton(QPainter *painter);

  <https://www.tbi.univie.ac.at/~pmg/tutorials/QT/html/qpushbutton.html>

- QGraphicsSene QGraphicsProxy...

  <http://qt-project.org/forums/viewthread/4020>

- QPushButton raised enabled

  <http://www.qtcentre.org/threads/42852-QStyledItemDelegate-paint-QPushButton-with-styleshee>

- QPushButton two icons

  <http://www.qtcentre.org/threads/39445-How-to-add-two-icons-images-to-the-same-QPushButton>

- QPainter

  http://qt-project.org/forums/viewthread/23628

- QGridLayout ScrollArea

  http://qt-project.org/forums/viewthread/20843

  http://qt-project.org/forums/viewthread/20924/

- Leftover five

  http://qt-project.org/doc/qt-4.8/qpainter.html

  http://qt-project.org/doc/qt-4.8/qwidget.html

  https://www.tbi.univie.ac.at/~pmg/tutorials/QT/html/qpushbutton.html

  http://qt.developpez.com/doc/4.7/qpainter/#drawpolygon

  http://qt.developpez.com/doc/4.7/painting-basicdrawing/