

Cristóvão Diniz Trevisan, Viktor Volochtchuk

# **Guitar Digitalizer**

Brazil

2017, v-0.0.1

Cristóvão Diniz Trevisan, Viktor Volochtchuk

## **Guitar Digitalizer**

Project presented as graduation material  
for the course of Electronic Engineering at  
UTFPR

Federal University of Technology - Paraná – UTFPR

Electronic Engineering

Graduation Program

Supervisor: Gustavo Benvenutti Borba

Brazil

2017, v-0.0.1

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Project presented as graduation material  
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Project Approved. Brazil, September 30, 2017:

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**Gustavo Benvenutti Borba**  
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**Professor**  
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Invited 3

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Invited 4

Brazil  
2017, v-0.0.1

*This work is dedicated to those who supported our way into through engineering course,  
even more when ourselves tried to give up.*

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# Abstract

Guitar are one of most popular instruments today, but there is one big disadvantage to use it: there is no good and affordable way to digitalize it's music. The biggest problem with this is the cost to annotate music, as it needs to be done by manually. This project tries to build one such system, building from passive hardware (hexaphonic pickup) to modern signal processing (pitch detection), attempting to produce a cheap and effective equipement for guitar music annotation by means of generating MIDI format data.

**Key-words:** guitar. digitalizer. MIDI. pitch. detection. hexaphonic.

# Resumo

Violões e guitarras estão entre os instrumentos mais populares da atualidade, mas existe uma grande desvantagem em os utilizar: não há um meio barato e eficaz para digitalizar sua música. O grande problema com isso é o alto custo para transcrever partituras, que atualmente é um processo manual. Esse projeto tenta construir um sistema com esse propósito, criando desde sensores passivos (captador hexafônico) até processamento digital de sinais moderno (detecção de nota), visando um produto barato e eficaz para anotação musical através da geração de dados no format MIDI.

**Key-words:** guitarra. digitalizador. MIDI. nota. detecção. hexafônico.



# List of Figures

# List of Tables

# List of abbreviations and acronyms

MIDI	Musical Instrument Digital Interface
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# List of symbols

$\Omega$	Ohm resistance unit
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# Introduction

Test cite ([MCLEOD; WYVILL, 2005](#)) Test cite 2([CHEVEIGNÉ; KAWAHARA, 2002](#)) Test cite 3([CARTER, 2000](#))

Part I

Hardware

## Part II

### Firmware



Part III

Software

## Part IV

### Results and Discussions

# Conclusion

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## Appendix

## APPENDIX A – Quisque libero justo

Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.

## APPENDIX B – Nullam elementum urna vel imperdiet sodales elit ipsum pharetra ligula ac pretium ante justo a nulla curabitur tristique arcu eu metus

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## Annex



## ANNEX A – Morbi ultrices rutrum lorem.

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## ANNEX B – Cras non urna sed feugiat cum sociis natoque penatibus et magnis dis parturient montes nascetur ridiculus mus

Sed consequat tellus et tortor. Ut tempor laoreet quam. Nullam id wisi a libero tristique semper. Nullam nisl massa, rutrum ut, egestas semper, mollis id, leo. Nulla ac massa eu risus blandit mattis. Mauris ut nunc. In hac habitasse platea dictumst. Aliquam eget tortor. Quisque dapibus pede in erat. Nunc enim. In dui nulla, commodo at, consectetur nec, malesuada nec, elit. Aliquam ornare tellus eu urna. Sed nec metus. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.

## ANNEX C – Fusce facilisis lacinia dui

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