

# PangoBeats Documentation

**PangoBeats Latest Version: 1.0.0 (Build 17)** - Updated on 04/15/2024

(In-app update also available)

## Introduction

PangoBeats is a stand-alone cutting-edge Windows application designed to enhance the audio experience by providing real-time Beats Per Minute (BPM) detection. It seamlessly integrates with BEYOND/QuickShow software, offering users the capability to synchronize their audio with visual performances. PangoBeats stands out with its user-friendly interface and powerful audio processing features, making it an indispensable tool for DJs, musicians, and live performers.

PangoBeats requires at least Windows 10 64-bit to function.

## Features

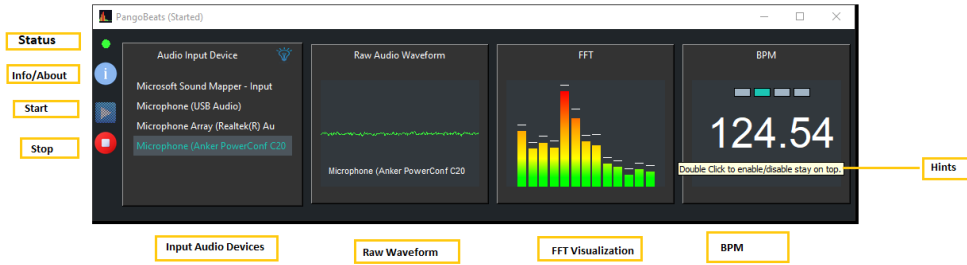
PangoBeats comes packed with an array of features tailored to enrich your audio-visual projects:

- **Real-Time BPM Detection:** The core functionality of PangoBeats is its ability to detect the BPM from any selected audio source in real time.
- **Integration with BEYOND/QuickShow:** After detecting the BPM, the application communicates directly with BEYOND/QuickShow, running on the same computer to synchronize your shows.
- **FFT Visualizer:** For an additional layer of visualization, the app includes a Fast Fourier Transform (FFT) visualizer that displays the spectrum of audio being processed.
- **Raw Audio Waveform Display:** Users can view the raw audio waveform in real time, providing immediate visual feedback of the audio track being analyzed.

## Interactive Elements

PangoBeats is designed with interactivity in mind, offering hints and actions to enhance user engagement:

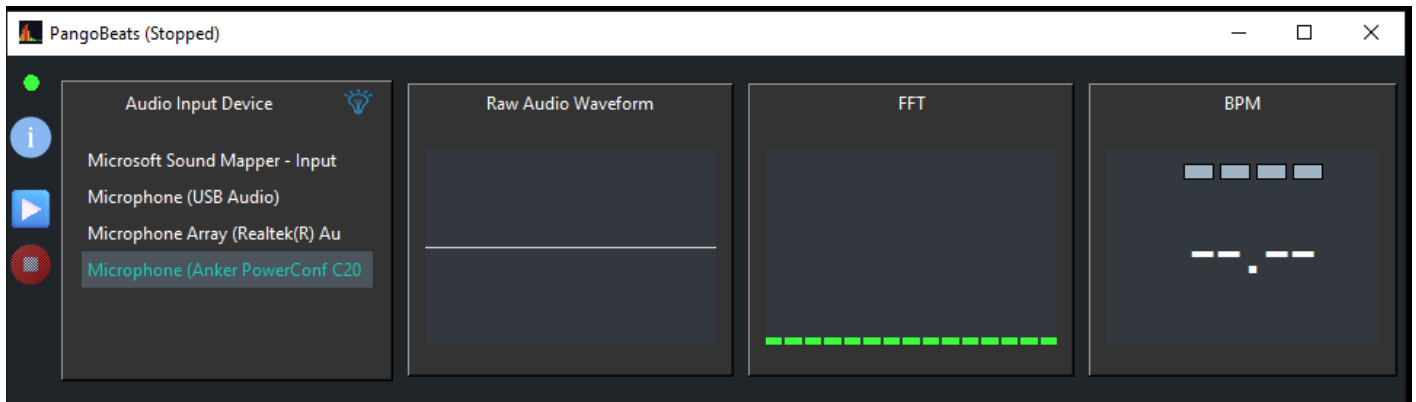
- **Tooltips:** When hovering over different windows and elements, helpful tooltips appear, like “Double click to enable/disable stay on top”.
- **Start/Stop Processing:** Users can click on the Start/Stop button after selecting their audio source to begin the BPM detection and processing.
- **Information and Help:** The Info button opens an About window, which contains links to support, checks for updates, and accesses the PangoBeats Wiki for additional help.



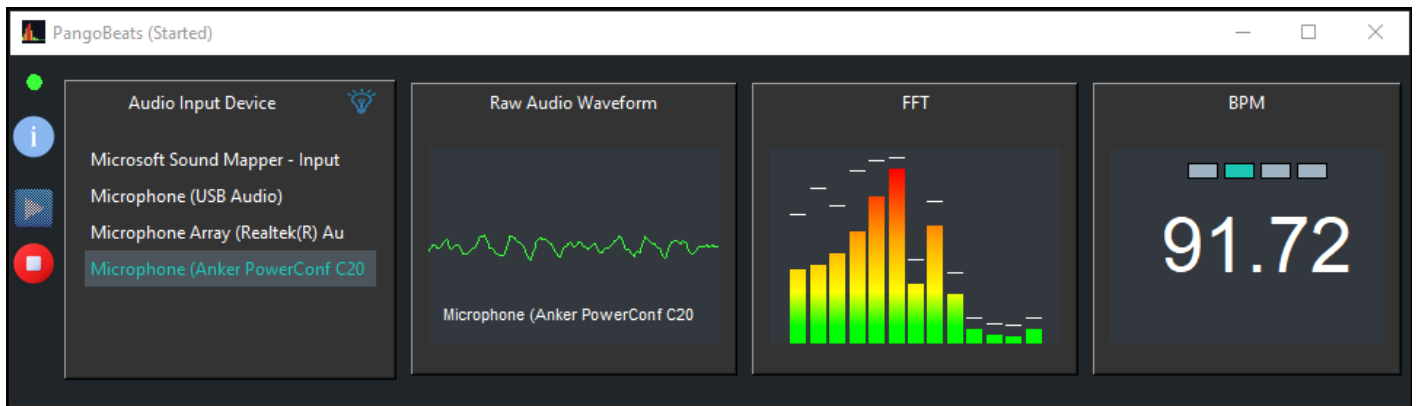
## Quick Demo

Here's a quick start guide to using PangoBeats with the help of screenshots:

- Select your audio input device from the scrollable list.
- Click on **Start** to begin BPM detection and see the application in action.



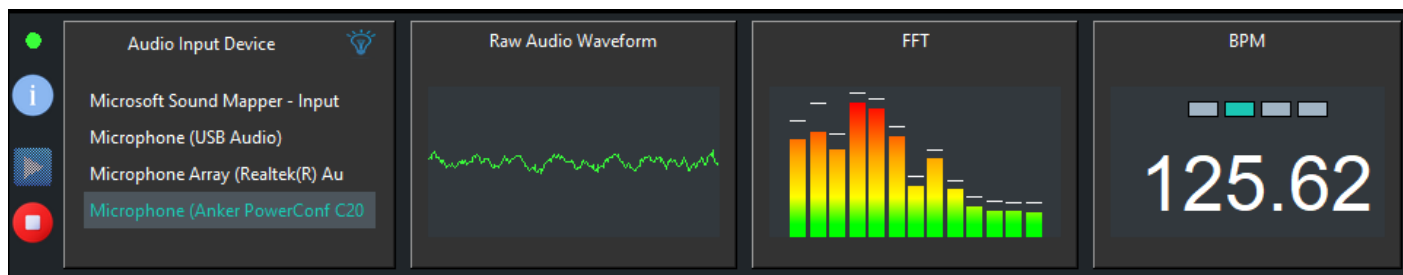
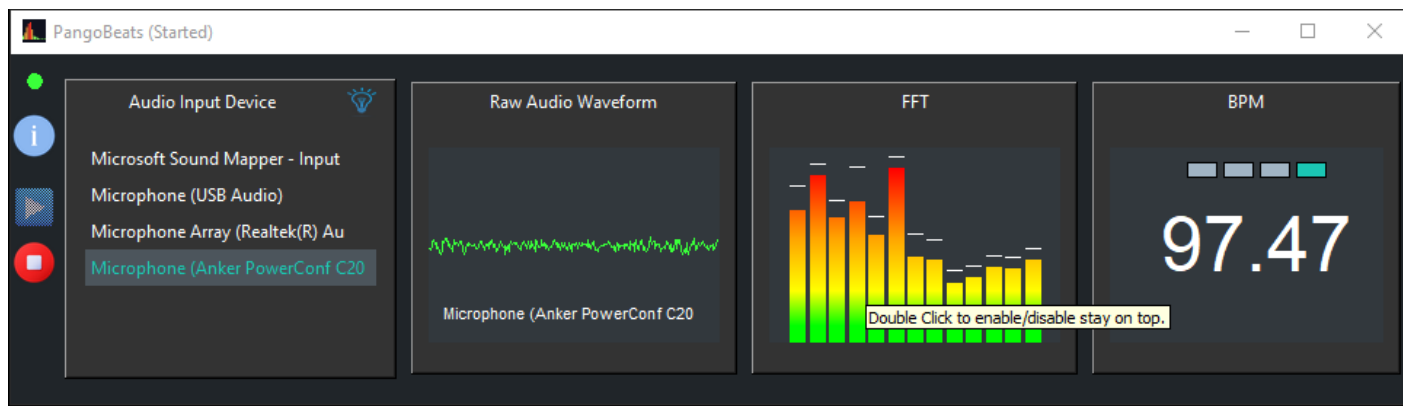
- Observe the real-time raw audio waveform, FFT visualizations, and BPM adjustments as the music plays.



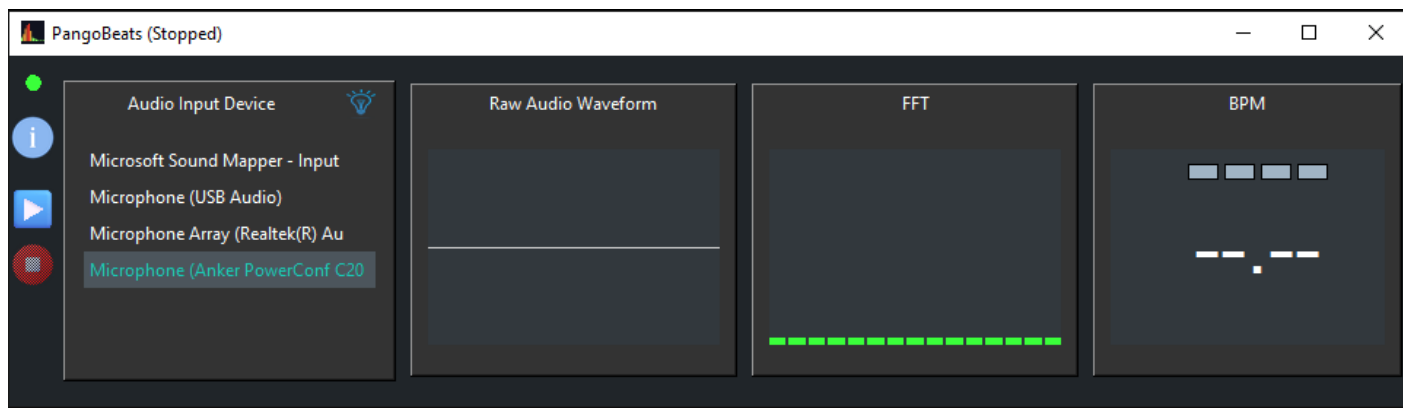
- The BPM will be displayed in the top bar of BEYOND/QuickShow, updating as the music changes.



- To keep PangoBeats on top of other windows, double-click anywhere on the window where you see the hints.



- When you wish to stop the processing, click on Stop.



## Updates

The PangoBeats documentation is a living document and will be updated regularly to reflect new features, improvements, and tips for using the application. Make sure to check back often to stay informed about the latest updates and get the most out of PangoBeats.

# Intellectual Property Notice and Credits

PangoBeats is a product of Pangolin Laser Systems, Inc.

The PangoBeats software was developed by Suhas Holla Karkada Chandrashekar, and William R. Benner, Jr.

## Open Source Software Used

PangoBeats utilizes open-source software components under various licenses. Below are the details of these components:

### Python:

- Description:** Python is an interpreted, high-level, and general-purpose programming language that emphasizes code readability with its notable use of significant whitespace.
- License:** Python Software Foundation License (PSFL)
- Usage:** Used as the primary programming language for developing PangoBeats.
- Website:** [Python.org](<https://www.python.org/>)
- License Details:** [Python License](<https://docs.python.org/3/license.html>)

### PyAudio:

- Description:** PyAudio provides Python bindings for PortAudio, a cross-platform audio I/O library, allowing easy access to audio streams.
- License:** MIT License
- Usage:** Used for handling real-time audio stream input and output within PangoBeats.
- Website:** [PyAudio](<http://people.csail.mit.edu/hubert/pyaudio/>)
- License Details:** [MIT License](<https://github.com/iovskiann/pyaudio/blob/master/LICENSE>)

### Aubio:

- Description:** Aubio is a tool designed for the extraction of annotations from audio signals. Its features include pitch detection, beat tracking, onset detection, and more.
- License:** GNU General Public License v3.0 (GPL-3.0)
- Usage:** Utilized for audio analysis tasks such as tempo detection and beat tracking in PangoBeats.
- Website:** [Aubio](<https://aubio.org/>)
- Source Code:** The source code for Aubio can be found at [Aubio's GitHub Repository](<https://github.com/aubio/aubio>).
- License Details:** [GPL-3.0 License](<https://github.com/aubio/aubio/blob/master/COPYING>)

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