

# Broadcast Sonification System - Help Guide

## Overview

This application transforms data into sound and back again - enabling real-time broadcasting and AI-friendly acoustic encoding. You can encode text to .wav, decode from audio, record from mic, or transcribe speech instantly.

## GUI Application (broadcast\_gui.exe)

Features:

- Encode plain text or .txt file to a .wav sound file
- Decode .wav sound files back into text
- Record microphone input and decode in real-time
- Transcribe voice/speech in audio into readable text using OpenAI Whisper
- Visualize waveform and frequency spectrum in-app

How to Use:

1. Launch GUI: Double-click broadcast\_gui.exe
2. Text Input: Type a message or upload a .txt file
3. Encode: Save as .wav via "Encode & Save" button
4. Decode: Load a .wav file via "Load WAV & Decode"
5. Mic Decode: Use "Mic Record & Decode" to capture & translate audio
6. Transcribe: Choose any .wav file and get speech transcription

## CLI Usage (broadcast\_cli.exe)

```
broadcast-cli --encode "Hello world" --output hello.wav
```

```
broadcast-cli --decode hello.wav
```

```
broadcast-cli --mic --output mic.wav
```

Run broadcast-cli --help for all options.

## Live Broadcast Flow

1. Host encodes a message into audio (.wav)
2. Audio is played aloud or streamed

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3. Any listener with this tool decodes it in real-time (GUI or CLI)

This allows AI agents, embedded systems, or human receivers to extract the message acoustically.

## Silent Installation

BroadcastInstaller.exe /VERYSILENT /NORESTART

- No pop-ups or UI
- Ideal for enterprise deployment
- Adds desktop and Start Menu shortcuts

## File Types Supported

- .txt (text input files)
- .wav (audio for encode/decode)
- Mic input (WAV output via system mic)

## Requirements

- Windows 10/11 64-bit
- Python 3.9+ (for CLI users)
- Whisper model is downloaded on first use
- Sound drivers and mic access enabled (for live recording)

## Support

For help, bug reports, or contributions:

Email: [support@yourdomain.com](mailto:support@yourdomain.com)

GitHub: [github.com/yourusername/broadcast-sonification](https://github.com/yourusername/broadcast-sonification)