Voice Age & Emotion Detection System - Installation Guide

📋 System Requirements

- **Operating System**: Windows 10/11, macOS 10.14+, or Linux (Ubuntu 18.04+)
- **Python**: Version 3.8 or higher
- **RAM**: Minimum 4GB (8GB recommended)
- **Disk Space**: At least 500MB free space

🚀 Quick Start Installation

Step 1: Install Python

Windows:

1. Download Python from python.org
2. Run the installer
3. ✅ **IMPORTANT**: Check "Add Python to PATH" during installation
4. Click "Install Now"

macOS:

```bash
# Using Homebrew
brew install python3
```

Linux:

```bash
sudo apt update
sudo apt install python3 python3-pip
```

Step 2: Verify Python Installation

Open terminal/command prompt and run:

```bash
```

```
python --version
# Should show: Python 3.8.x or higher

pip --version
# Should show pip version
```

Step 3: Download the Application

Download and extract all files to a folder, for example:

- Windows: `C:\VoiceDetector\`
- macOS/Linux: `~/VoiceDetector/`

Your folder structure should look like:

```
VoiceDetector/
├── main.py
├── voice_analyzer.py
├── gui_interface.py
├── train_models.py
├── requirements.txt
├── README.md
└── INSTALLATION_GUIDE.md
```

Step 4: Install Dependencies

Open terminal/command prompt in the application folder and run:

```bash
pip install -r requirements.txt
```

This will install:

- numpy (numerical computing)
- librosa (audio analysis)
- soundfile (audio file handling)
- scipy (scientific computing)
- matplotlib (plotting, optional)

If you encounter errors, try:

```bash
```

```bash
pip install --upgrade pip
pip install -r requirements.txt --no-cache-dir
```

Step 5: Run the Application

```bash
bash

python main.py
```

The GUI window should appear! 🎉

🎯 Testing the Application

Creating Test Audio Files

If you don't have audio files, you can:

1. **Record using Windows Voice Recorder**:

   - Windows Key → Type "Voice Recorder"

   - Record your voice

   - Save as .wav or .mp3

2. **Record using macOS QuickTime**:

   - Open QuickTime Player

   - File → New Audio Recording

   - Record and save

3. **Use online tools**:

   - <u>Online Voice Recorder</u>

   - Record and download

4. **Download sample files**:

   - Find free voice samples on <u>Freesound.org</u>

Test the Application

1. Click "Select Audio File"

2. Choose your recording

3. Click "Analyze Voice"

4. View the results!

🔧 Troubleshooting

Problem: "pip is not recognized"

Solution:

```bash
# Windows
python -m pip install -r requirements.txt

# macOS/Linux
python3 -m pip install -r requirements.txt
```

Problem: "librosa installation fails"

Solution:

```bash
# Install audio backend first
# Windows
pip install soundfile

# macOS
brew install libsndfile
pip install soundfile

# Linux
sudo apt-get install libsndfile1
pip install soundfile

# Then install librosa
pip install librosa
```

Problem: "tkinter not found"

Solution:

```bash
# Linux only (tkinter usually included on Windows/macOS)
sudo apt-get install python3-tk
```

Problem: "Audio file cannot be loaded"

Solutions:

- Ensure file format is supported (WAV, MP3, FLAC, OGG)

- Try converting to WAV format using online converter

- Check if file is corrupted

- Ensure file path has no special characters

Problem: GUI looks distorted

Solution:

- Adjust display scaling in system settings

- The window is fixed at 650x550 pixels

- Try running on a display with at least 1280x720 resolution

Problem: Analysis is too slow

Solutions:

- Use shorter audio clips (10-15 seconds is sufficient)

- Ensure no other heavy applications are running

- Convert high-quality audio to standard quality (44.1kHz, 16-bit)

📱 Platform-Specific Notes

Windows

- If Windows Defender blocks the app, click "More info" → "Run anyway"

- Some antivirus software may flag Python scripts - add exception if needed

macOS

- If you get "cannot be opened because developer not verified":
  - Right-click → Open → Click "Open" again
  - Or: System Preferences → Security → Allow

Linux

- May need to install additional audio codecs:

bash

```bash
sudo apt-get install ffmpeg
```

🎓 Advanced Installation

Creating Virtual Environment (Recommended)

```bash
# Create virtual environment
python -m venv venv

# Activate it
# Windows:
venv\Scripts\activate
# macOS/Linux:
source venv/bin/activate

# Install dependencies
pip install -r requirements.txt

# Run application
python main.py

# Deactivate when done
deactivate
```

Installing Development Version

For contributing or training custom models:

```bash
pip install -r requirements.txt
pip install jupyter notebook scikit-learn  # For model training
```

📊 System Performance

Expected Performance:

- Feature extraction: 2-5 seconds

- Gender detection: < 1 second

- Age estimation: < 1 second

- Emotion detection: < 1 second

- Total analysis time: 3-8 seconds per file

Resource Usage:

- RAM: ~200-500 MB during analysis

- CPU: 10-30% on modern processors

- Disk: Minimal (no caching)

🆘 Getting Help

If you encounter issues:

1. **Check the README.md** for feature documentation

2. **Review error messages** carefully

3. **Ensure all dependencies are installed** correctly

4. **Try with a simple WAV file** first

5. **Check Python version** is 3.8 or higher

🔄 Updating the Application

To update dependencies:

```bash
pip install --upgrade -r requirements.txt
```

🗑️ Uninstallation

To remove the application:

1. Delete the application folder

2. (Optional) Remove virtual environment if created

3. (Optional) Uninstall Python packages:

```bash
pip uninstall numpy librosa soundfile scipy matplotlib
```

✅ Verification Checklist

Before reporting issues, verify:

☐ Python 3.8+ is installed

- [ ] All dependencies from requirements.txt are installed
- [ ] No error messages during pip install
- [ ] Audio file format is supported
- [ ] Audio file is not corrupted
- [ ] Sufficient disk space available
- [ ] No firewall blocking Python

🎉 Success!

If the GUI opens and you can analyze audio files, congratulations!

The installation is complete. Enjoy using the Voice Age & Emotion Detection System!

Need more help? Check the main README.md for usage instructions and feature details.