🚀 Companion AI Deployment Steps

Here's how to deploy your Companion AI to your Raspberry Pi 5:

📋 Prerequisites

**Hardware Setup:**

* Raspberry Pi 5 with Raspberry Pi OS installed
* USB microphone or Pi HAT with microphone
* Speakers or headphones connected
* Internet connection
* SD card with at least 16GB space

**Software Requirements:**

* Fresh Raspberry Pi OS (Debian-based)
* SSH access (optional but recommended)

🔽 Step 1: Get Your Code to Raspberry Pi

**Option A: Clone from GitHub (after you save it)**

git clone https://github.com/yourusername/companion-ai.git

cd companion-ai

**Option B: Direct download**

* Download your project as ZIP from Replit
* Transfer to Pi via USB, SCP, or direct download

⚙️ Step 2: Run the Automated Setup Script

Your project includes a complete setup script that handles everything:  
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# Make the setup script executable

chmod +x setup\_raspberry\_pi.sh

# Run the full setup (installs everything automatically)

./setup\_raspberry\_pi.sh

# Optional: Also create a system service and desktop shortcut

./setup\_raspberry\_pi.sh --service --desktop

**What the setup script does:**

* Updates system packages
* Installs Python 3 and audio dependencies
* Sets up audio system (ALSA/PulseAudio)
* Creates virtual environment
* Installs all Python packages (OpenAI, speech recognition, etc.)
* Tests audio setup
* Configures system services (optional)

🔑 Step 3: Configure Your API Key   
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# Set your OpenAI API key permanently

echo 'export OPENAI\_API\_KEY="your-api-key-here"' >> ~/.bashrc

source ~/.bashrc

# Verify it's set

echo $OPENAI\_API\_KEY

🎤 Step 4: Test Audio Setup  
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# Test microphone

arecord -d 3 -f cd test\_mic.wav && aplay test\_mic.wav

# Test speakers

speaker-test -t sine -f 1000 -l 1

# Test text-to-speech

echo "Hello, this is a test" | espeak

🧪 Step 5: Test Your Companion AI

**Text Mode Test (no voice needed):**A black background with white text

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source companion\_env/bin/activate

python -m companion\_ai.main --test

**Full Voice Mode:**A black background with white text

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source companion\_env/bin/activate

python -m companion\_ai.main

🎯 Step 6: Start Using Your AI

**Wake Words:**

* **"Hey Haro"**
* **"Haro"**
* **"AI"**

**Example Conversation:**

1. Say: "Hey Haro"
2. Wait for acknowledgment
3. Say: "What's the weather like?"
4. Listen to AI response

🔧 Step 7: Optional System Service Setup

If you used --service during setup, you can manage your AI as a system service:

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# Start the service

sudo systemctl start companion-ai

# Check status

sudo systemctl status companion-ai

# Stop the service

sudo systemctl stop companion-ai

# View logs

journalctl -u companion-ai -f

🛠️ Troubleshooting Common Issues

**Audio Problems:**A screenshot of a computer program

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# Check audio devices

aplay -l

arecord -l

# Restart audio services

sudo systemctl --user restart pulseaudio

**Permission Issues:**

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# Add user to audio group

sudo usermod -a -G audio $USER

# Logout and login again

**API Key Issues:**

* Verify your OpenAI account has available credits
* Check the API key is correctly set in environment

🎛️ Configuration Options

You can customize your AI by editing companion\_ai/config.py:

* Change wake words
* Adjust voice speed and volume
* Modify AI personality
* Set microphone sensitivity

📱 Future Robot Integration

Your modular architecture is ready for expansion:

* **Movement**: Add motor control in new modules
* **Sensors**: Integrate ultrasonic, camera, or other sensors
* **IoT**: Connect to smart home devices
* **Navigation**: Add mapping and path planning

🔄 **Steps to Upgrade Haro from Local (FREE) to OpenAI Mode**

Here are the complete steps to seamlessly transition your Haro AI to use OpenAI's API when you're ready:

📝 **Step 1: Get Your OpenAI API Key**

1. **Create OpenAI Account**: Go to [https://platform.openai.com](https://platform.openai.com/)
2. **Add Payment Method**: Navigate to Billing → Add payment method
3. **Generate API Key**:
   * Go to API Keys section
   * Click "Create new secret key"
   * Copy the key (starts with sk-...)
   * **Important**: Save it securely - you can't see it again!

⚙️ **Step 2: Configure Your Raspberry Pi**

**On your Raspberry Pi, set the environment variables:**

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# Method 1: Temporary (for this session only)

export AI\_MODE="openai"

export OPENAI\_API\_KEY="sk-your-actual-api-key-here"

# Method 2: Permanent (survives reboots)

echo 'export AI\_MODE="openai"' >> ~/.bashrc

echo 'export OPENAI\_API\_KEY="sk-your-actual-api-key-here"' >> ~/.bashrc

source ~/.bashrc

🧪 **Step 3: Test the Transition**

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# Activate your environment

source companion\_env/bin/activate

# Test in text mode first

python -m companion\_ai.main --test

# If test works, try full voice mode

python -m companion\_ai.main

🎯 **Step 4: Verify the Upgrade**

**You'll know it's working when you see:**

* Configuration shows: AI Mode: openai (API-based)
* More sophisticated, contextual responses
* Better conversation flow and memory
* Enhanced understanding of complex queries

🔄 **Step 5: Easy Switching Between Modes**

**Switch back to Local (FREE) mode anytime:**

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export AI\_MODE="local"

python -m companion\_ai.main

**Switch to OpenAI mode:**



export AI\_MODE="openai"

python -m companion\_ai.main

💰 **Step 6: Monitor Usage & Costs**

* **Check Usage**: <https://platform.openai.com/usage>
* **Set Limits**: Go to Billing → Usage limits
* **Typical Cost**: ~$0.002 per conversation (very affordable!)

⚠️ **Important Notes**

**✅ What Stays the Same:**

* All wake words: "Hey Haro", "Haro", "AI"
* Voice recognition and text-to-speech
* Same commands and interface
* All existing functionality

**🆙 What Gets Better:**

* More natural conversations
* Better context understanding
* Can discuss complex topics
* Improved personality and responses
* Remembers longer conversation context

**🔒 Privacy Consideration:**

* Local mode: 100% offline, no data leaves your device
* OpenAI mode: Conversations sent to OpenAI servers (encrypted)

🛠️ **Troubleshooting**

**If OpenAI mode doesn't work:**

1. Verify API key: echo $OPENAI\_API\_KEY
2. Check your OpenAI account has credits
3. Test internet connectivity
4. Check logs for error messages

**Switch back to local mode immediately:**



export AI\_MODE="local"