RSI-Sentiment Trading System Installation Guide

For NVIDIA Jetson Nano

Prerequisites

- NVIDIA Jetson Nano with JetPack 4.6 or higher
- Python 3.7 or higher
- Internet connection for market data
- At least 4GB RAM (recommended)

Step 1: System Preparation

bash

```bash
# Update system packages
sudo apt-get update
sudo apt-get upgrade -y

# Install system dependencies
sudo apt-get install -y python3-pip python3-dev python3-venv
sudo apt-get install -y build-essential libssl-dev libffi-dev
sudo apt-get install -y python3-numpy python3-pandas
```

Step 2: Create Virtual Environment

bash

```bash
# Create project directory
mkdir ~/rsi-sentiment-trading
cd ~/rsi-sentiment-trading

# Create virtual environment
python3 -m venv trading_env

# Activate virtual environment
source trading_env/bin/activate

# Upgrade pip
pip install --upgrade pip setuptools wheel
```

Step 3: Install Python Dependencies

bash

```bash
# Install required packages
pip install aiohttp>=3.8.5
pip install aiofiles>=23.1.0
pip install websockets>=11.0.3
pip install numpy>=1.24.3
pip install pandas>=2.0.3
pip install psutil>=5.9.5
pip install pytz>=2023.3
pip install aiohttp-cors>=0.7.0

# Optional: Install GPU monitoring for Jetson
# Note: GPUtil might not work on Jetson, use jtop instead
sudo pip3 install jetson-stats
```

Step 4: Fix Import Issues in VS Code

If you're getting "reportMissingModuleSource" errors in VS Code:

1. **Select the correct Python interpreter:**
   - Press `Ctrl+Shift+P`
   - Type "Python: Select Interpreter"
   - Choose the interpreter from your virtual environment: `./trading_env/bin/python`
2. **Reload VS Code window:**
   - Press `Ctrl+Shift+P`
   - Type "Developer: Reload Window"
3. **Configure VS Code settings:** Create `.vscode/settings.json` in your project root:

   json

   ```json
   {
       "python.defaultInterpreterPath": "${workspaceFolder}/trading_env/bin/python",
       "python.terminal.activateEnvironment": true,
       "python.linting.enabled": true,
       "python.linting.pylintEnabled": false,
       "python.linting.flake8Enabled": true,
       "python.analysis.typeCheckingMode": "basic",
       "python.analysis.autoImportCompletions": true
   }
   ```

Step 5: Alternative Installation Methods

If pip installations fail, try:

bash

```bash
# For aiohttp
python3 -m pip install --no-binary :all: aiohttp

# For numpy (use system package)
sudo apt-get install python3-numpy
# Then create symlink
ln -s /usr/lib/python3/dist-packages/numpy ~/.local/lib/python3.*/site-packages/

# For problematic packages, install from source
git clone https://github.com/aio-libs/aiohttp
cd aiohttp
python3 setup.py install
```

Step 6: Setup Project Structure

bash

```bash
# Copy all your Python files to the project directory
cp *.py ~/rsi-sentiment-trading/

# Create necessary directories
mkdir -p ~/rsi-sentiment-trading/logs
mkdir -p ~/rsi-sentiment-trading/data
mkdir -p ~/rsi-sentiment-trading/web_dashboard
```

Step 7: Configure the System

1. Edit `trading_config.json` to set your symbols and preferences
2. Adjust memory settings for Jetson Nano's limited RAM:

   json

   ```json
   {
     "cache": {
       "max_prices": 100,  // Reduced from 200
       "max_volumes": 25   // Reduced from 50
     }
   }
   ```

Step 8: Test the Installation

python

```python
# test_imports.py
import sys
print(f"Python version: {sys.version}")

try:
    import aiohttp
    print("✓ aiohttp imported successfully")
except ImportError as e:
    print(f"✗ aiohttp import failed: {e}")

try:
    import websockets
    print("✓ websockets imported successfully")
except ImportError as e:
    print(f"✗ websockets import failed: {e}")

try:
    import psutil
    print("✓ psutil imported successfully")
except ImportError as e:
    print(f"✗ psutil import failed: {e}")

# Test Jetson GPU access
try:
    import jtop
    print("✓ jtop (Jetson monitoring) available")
except:
    print("✗ jtop not available - install with: sudo pip3 install jetson-stats")
```

Step 9: Run the System

bash

```bash
# Activate virtual environment
source trading_env/bin/activate

# Run the main controller
python3 main_controller.py
```

Troubleshooting

1. **Import errors persist:**
   - Check Python path: `python3 -c "import sys; print(sys.path)"`
   - Verify package installation: `pip list | grep aiohttp`
   - Try reinstalling in user space: `pip install --user aiohttp`
2. **Memory issues on Jetson Nano:**
   - Reduce number of symbols in config
   - Decrease cache sizes
   - Add swap space:

     bash

     ```
     sudo fallocate -l 4G /swapfile
     sudo chmod 600 /swapfile
     sudo mkswap /swapfile
     sudo swapon /swapfile
     ```

3. **Performance optimization for Jetson:**
   - Set Jetson to maximum performance:

     bash

     ```
     sudo nvpmodel -m 0
     sudo jetson_clocks
     ```

Optional: Systemd Service

Create a systemd service to run at startup:

bash

```
sudo nano /etc/systemd/system/rsi-trading.service
```

ini

```ini
[Unit]
Description=RSI Sentiment Trading System
After=network.target

[Service]
Type=simple
User=your_username
WorkingDirectory=/home/your_username/rsi-sentiment-trading
Environment="PATH=/home/your_username/rsi-sentiment-trading/trading_env/bin"
ExecStart=/home/your_username/rsi-sentiment-trading/trading_env/bin/python main_contro
Restart=on-failure
RestartSec=10

[Install]
WantedBy=multi-user.target
```

Enable and start:

bash

```bash
sudo systemctl enable rsi-trading.service
sudo systemctl start rsi-trading.service
```

Monitoring

Use these commands to monitor the system:

bash

```bash
# View logs
tail -f trading_system.log

# Monitor Jetson performance
sudo jtop

# Check service status
sudo systemctl status rsi-trading.service
```