WebRTC Installation in Ubuntu

Note: Make sure you have the latest ubuntu version that is 24.01 since the webrtcsink is supported on Gstreamer earlier version 1.18.1 (latest version is 1.24.1)

Step 1: Install Required GStreamer Packages

Run the following command to install the necessary GStreamer components:

```
sudo apt update && sudo apt install gstreamer1.0-tools gstreamer1.0-plugins-base \
gstreamer1.0-plugins-good gstreamer1.0-plugins-bad gstreamer1.0-plugins-ugly gstreamer1.0-libav
```

Note: This command might not install the `webrtcsink` plugin, which is part of `gstreamer1.0-plugins-bad`. Follow the steps below to build and install it manually.

Step 2: Build and Install `webrtcsink`

1. Clone and Build `gst-plugins-rs`

Navigate to the appropriate directory and build the WebRTC plugin:

```
cd ~/gst-plugins-rs
cargo build --release
```

2. Install Required Dependencies

If you encounter build errors, ensure the required development libraries are installed:

```
sudo apt update
sudo apt install libcairo2-dev pkg-config
```

```
sudo apt install libpango1.0-dev pkg-config
```

After installing these dependencies, rerun the build command:

```
cargo build --release
```

3. Set the GStreamer Plugin Path

Once the build is complete, update the GStreamer plugin path to include the newly built `webrtcsink`:

```
export GST_PLUGIN_PATH="$HOME/gst-plugins-
rs/target/release:$GST_PLUGIN_PATH"
```

To verify the installation, run:

```
gst-inspect-1.0 webrtcsink
```

Step 3: Permanent Installation of `webrtcsink`

1. Locate the `libgstrswebrtc.so` File

Find the built `libgstrswebrtc.so` file:

```
find ~/gst-plugins-rs/ -name "libgstrswebrtc.so"
```

Or search the entire home directory:

```
find ~/ -name "libgstrswebrtc.so"
```

2. Copy the Plugin to the System-Wide Directory

Once the file is located (e.g., `~/gst-plugins-rs/target/release/`), copy it to the GStreamer plugin directory:

```
sudo cp ~/gst-plugins-rs/target/release/libgstrswebrtc.so
/usr/lib/x86_64-linux-gnu/gstreamer-1.0/
```

3. Verify the GStreamer Plugin Path

To find the system plugin directory, run:

```
gst-inspect-1.0 --plugin-path
```

4. Refresh GStreamer Plugin Cache

After copying the file, refresh the plugin registry:

```
gst-inspect-1.0 --gst-disable-registry-update
gst-inspect-1.0 webrtcsink
```

If `webrtcsink` appears in the output, the installation is successful!

This guide ensures `webrtcsink` is installed and available for use with GStreamer on Ubuntu.

OpenCV with GStreamer Support Installation Guide

Overview

By default, OpenCV does not include GStreamer support. To enable GStreamer functionality, OpenCV must be built from source with the appropriate flags. This guide provides step-by-step instructions to compile OpenCV with GStreamer support.

Prerequisites

Before proceeding with the OpenCV build, ensure you have the latest GStreamer version installed, including WebRTCSink (version 1.24.1).

Install GStreamer:

```
sudo apt update && sudo apt install gstreamer1.0-tools gstreamer1.0-plugins-base \
gstreamer1.0-plugins-good gstreamer1.0-plugins-bad gstreamer1.0-plugins-ugly gstreamer1.0-libav
```

Verify GStreamer installation:

```
gst-inspect-1.0 --version
```

Ensure that WebRTCSink is available:

```
gst-inspect-1.0 webrtcsink
```

Building OpenCV from Source with GStreamer Support

The following shell script automates the OpenCV installation process:

```
#!/bin/bash

# Define OpenCV version
OPENCV_VER="74"

# Create a temporary directory for the build
TMPDIR=$(mktemp -d)
```

```
# Clone OpenCV repository
cd "${TMPDIR}"
git clone --branch ${OPENCV_VER} --depth 1 --recurse-submodules --
shallow-submodules \
    https://github.com/opencv/opencv-python.git opencv-python-
${OPENCV_VER}

# Navigate to the OpenCV source directory
cd opencv-python-${OPENCV_VER}

# Set build options
export ENABLE_CONTRIB=0
export ENABLE_HEADLESS=1
export CMAKE_ARGS="-DWITH_GSTREAMER=ON"

# Build OpenCV
python3 -m pip wheel . --verbose
# Install OpenCV
python3 -m pip install opencv_python*.whl

echo "OpenCV ${OPENCV_VER} installation complete!"
```

Execution:

Save the script as `install_opencv.sh` and run:

```
bash install_opencv.sh
```

Verifying OpenCV GStreamer Support

After installation, verify that OpenCV has GStreamer enabled by running the following Python command:

```
import cv2
print(cv2.getBuildInformation())
```

Look for the `GStreamer` section in the output:

```
Video I/O:
     DC1394:                      YES (2.2.6)
     FFMPEG:                      YES
       avcodec:                   YES (60.31.102)
       avformat:                  YES (60.16.100)
       avutil:                    YES (58.29.100)
       swscale:                   YES (7.5.100)
       avresample:                NO
     GStreamer:                   YES (1.24.2)
     v4l/v4l2:                    YES (linux/videodev2.h)
```

Ensure `GStreamer: YES` appears in the output.

Conclusion

Following this guide, you have successfully built and installed OpenCV with GStreamer support. You can now utilize GStreamer pipelines for video processing within OpenCV.

For troubleshooting, check logs during installation and ensure dependencies are correctly installed.