User Manual

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1 Open Source Software

used a few open source library for the completion of this MP.

- ffmpeg (http://www.ffmpeg.org/)

- LAME mp3 encoder (http://lame.sourceforge.net/)

- x264 (http://www.videolan.org/developers/x264.html)

1. x264 Configuration

   ```
   ./configure
   make
   make install
   ```

2. LAME Configuration

   ```
   ./configure
   make
   make install
   ```

3. ffmpeg Configuration

   ```
   ./configure --enable-shared  --enable-libx264 --enable-gpl --enable-version3
   --enable-pthreads --disable-yasm --enable-libmp3lame
   make
   make install
   ```

2 Usage

```
make
```

```
To use the recorder program, execute:
./recorder YOURFILENAMEHERE.mkv
```

```
To use the player program, execute:
./player YOURFILENAMEHERE.mkv
```

Pan/Tilt: Use arrow keys to pan/tilt the camera.

Note: The recorder encodes the video and audio streams slightly out of sync. However, our player syncronizes the two streams according to how it was encoded. Therefore, the player plays videos correctly. The MP description notes that only the player must properly sync audio and video; to witness that our player syncronizes the audio and video properly, you may play the included sample.avi file.

3   Features

1. **Video Recording**: We access the webcam through the V4L2 interface and encode the image as 640x480 mpeg-4 at 15 fps

2. **Video Window**: The recorder shows the video that is being encoded.

3. **Video Compression**: We encode the video with mpeg4 encoding.

4. **Audio Recording**: We access the raw audeo from a microphone with OSS.

5. **A/V Muxer**: We use ffmpeg to encode the video and audio concurrently and save them into a single mkv file.

6. **Pan/Tilt**: Program implements pan/tilt functionality