

v4l2 stream sharing

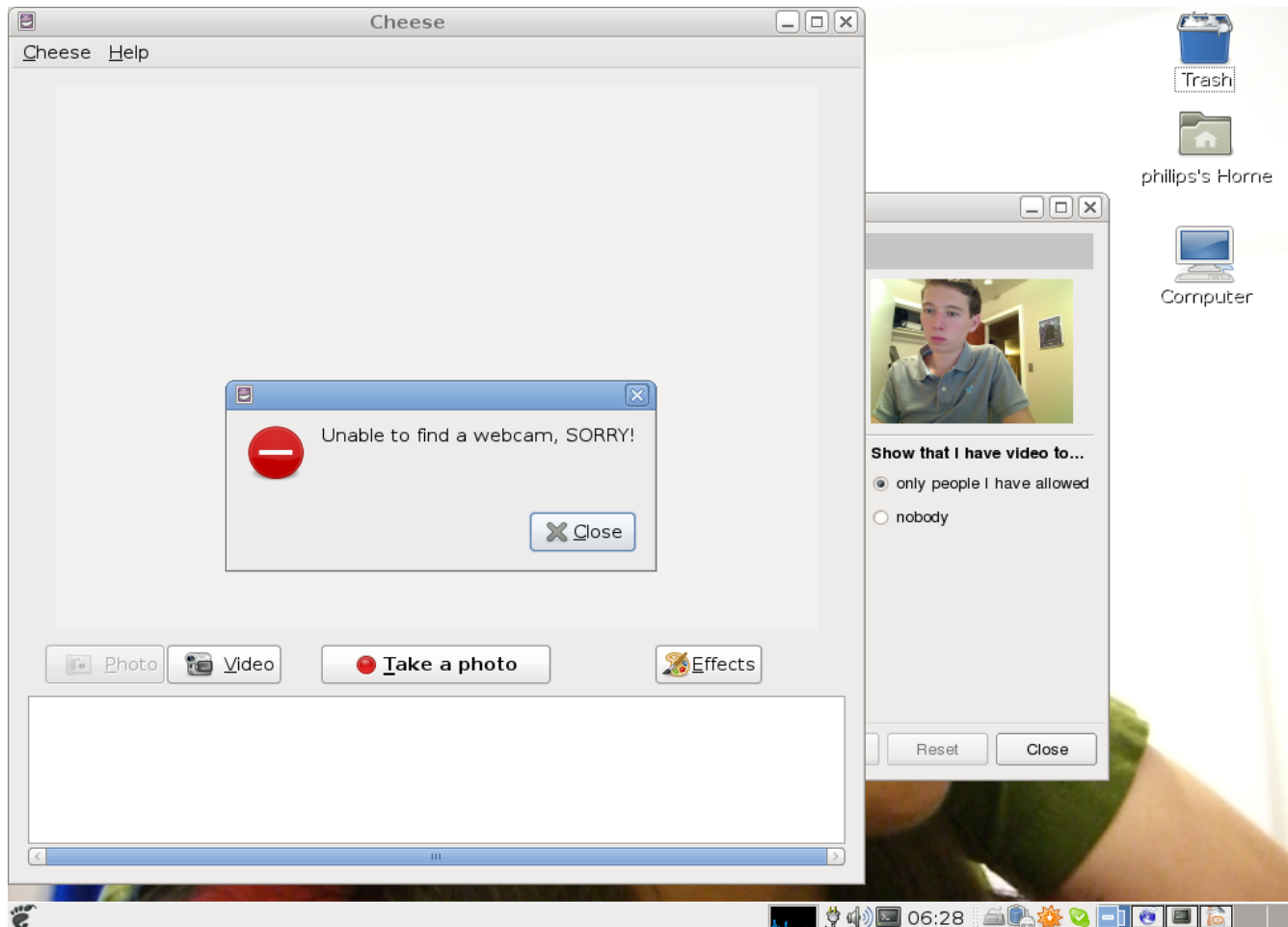
Brandon Philips
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Novell.

Motivations

Single Streaming Application Problem



Motivations

- User-space autofocus

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- User-space autofocus
- Face tracking and panning

MISSING

DELL LAPTOP

WITH BROKEN LEFT CORNER OF
SCREEN - IN BLACK CASE

INSPIRON MODEL FROM ~ 2003
COMPUTER IS OBSOLETE BUT
INFO ON IT IS VITAL TO
GRADUATING SENIOR'S THESIS

REWARD

GREATER
THAN RESALE
VALUE

ASKED

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- “Take photo of thief” software

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- Only transform stream once

Approach

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- Per user session video daemon
- Applications share using RO shm area
- Communicate with daemon via sockets
- Sound familiar?
- I have been reading PulseAudio ;)

Help Wanted: AnekVideo

`github.com/philips/anevideo`

`git://ifup.org/philip/anevideo.git`

One memcpy too much



Multi-map v4l2

- Modify v4l2 to allow multiple buffer users
- First process is “authorized” to make format changes
- REQBUF increments number of stream users
- QBUF increments refcount on buffer
- DQBUF decrements refcount on buffer

Multi-map v4l2 cont

- Will need to be implemented per driver
- Multi map will benefit from a daemon
 - Format negotiation to satisfy all clients instead of first
 - Manage applications that fall behind
- v4l2 userptr memory type to copy directly to SHM

Questions & Thanks

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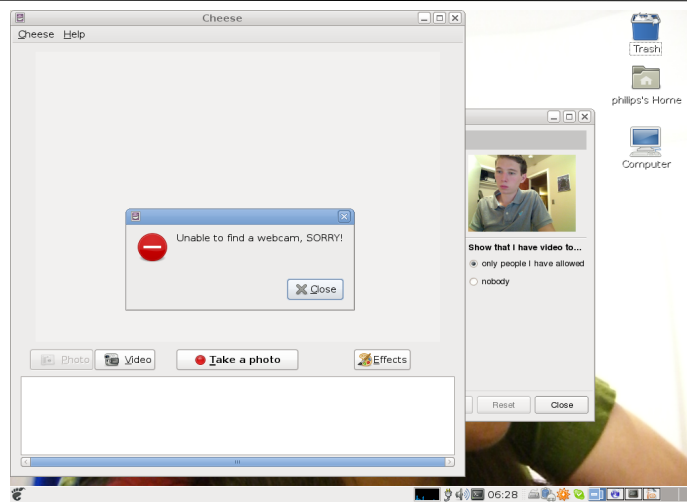
Novell.

This work isn't sponsored by Novell but they are my employer and it is a fun place to work.

Plus, this openSUSE template looks awesome compared to the OO.org defaults :D

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A number of cameras now only do manual focus and rely on the OS to do focus for them. This requires a daemon that can look at the incoming frames and do the focusing

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A number of cameras on other OSes offer drivers that will detect faces and crop the frame to that face region. This is useful for Skype and other video conferencing applications that have very small frame sizes

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It would be nice to be able to save the session going over Skype/Pidgin/etc. I talk to my future inlaws and sometimes practice hindi and it would be nice to see how poorly my speaking was.

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Some devices offer driver specific frame formats that libv4l converts. It would be nice to not make this conversion twice.

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This project has been relegated to my second hobby project status since last years talk. I have regained interest though in the last month or so.

Having a group of motivated people helping would be a better situation then me working alone though.

One memcopy too much



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This is the first USB 3.0 webcam to be announced. It is from Point Grey and streams “uncompressed” 1920x1080p frames at 60fps!

Originally I envisioned AnekVideo would copy and share frames via the shm in every case.

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