VIDEO APP INTRODUCTION

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Agenda

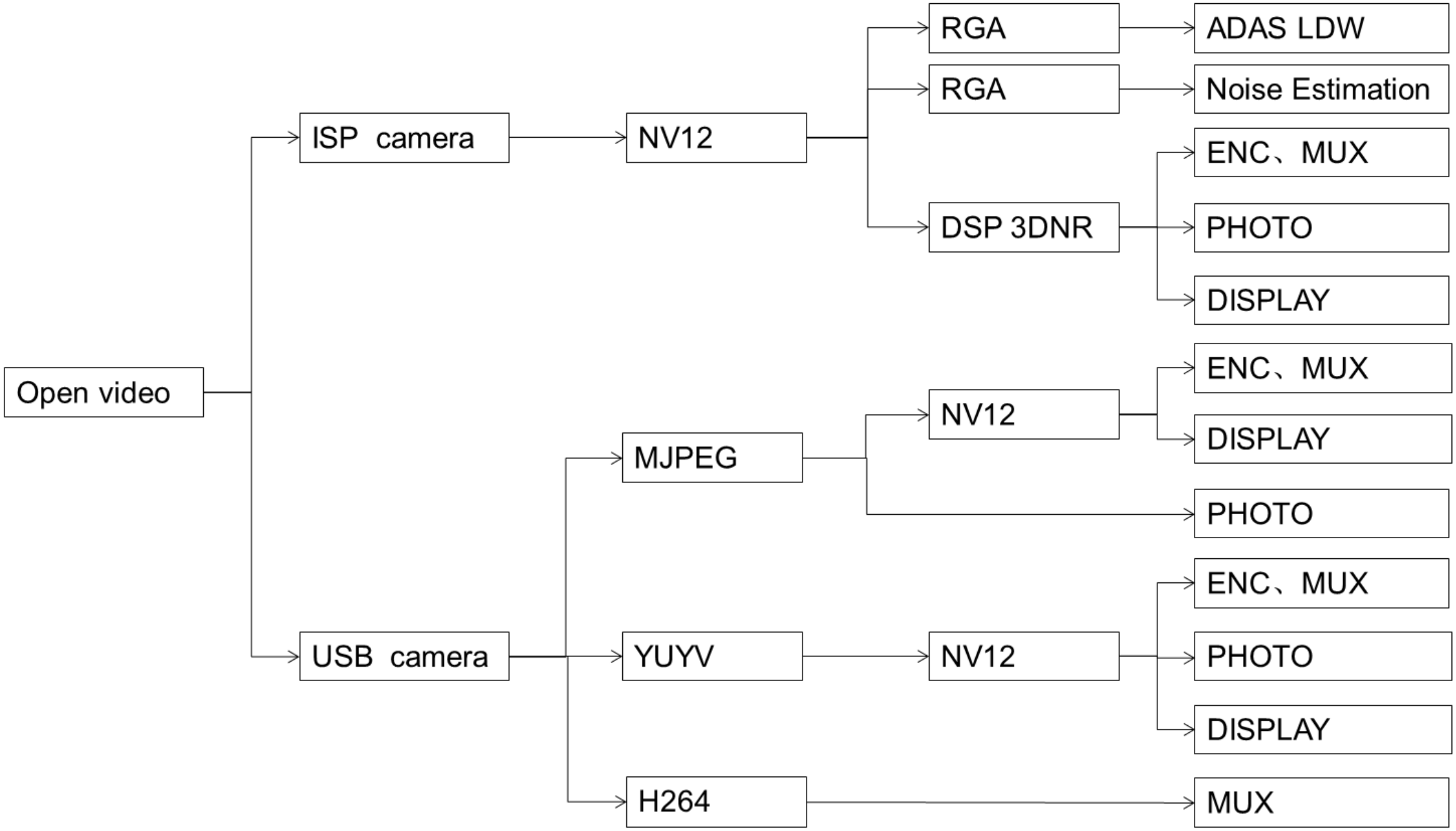
- VIDEO APP Function
- VIDEO APP Framework
- VIDEO APP Main Process
- Add Stream PU
- Display
- Using ION
- Q&A

VIDEO APP Function

VIDEO APP Function

- Support Front and Rear Dual Camera PIP Preview
- Support Front, Rear and Dual Camera Recording
- Support Record, Photo, Playback Mode
- Support 3DNR (Night Vision Enhancement)
- Support ADAS LDW (Lane Departure Warning)
- Support White Balance Settings, including Auto, Daylight, Fluorescent, Cloudy, Light
- Support Exposure Compensation
- Support User-defined Video Watermark
- Support Power Frequency Selection: China, Europe 50Hz; USA, Japan 60Hz

VIDEO APP Framework


Open video
ISP camera
NV12
RGA
ADAS LDW
RGA
Noise Estimation
DSP 3DNR
ENC、MUX
PHOTO
DISPLAY
USB camera
MJPEG
NV12
ENC、MUX
DISPLAY
PHOTO
YUYV
NV12
ENC、MUX
PHOTO
DISPLAY
H264
MUX

VIDEO APP Main Process

VIDEO Main Process

1、initrec
Get resolution and frame rate parameter of front, rear camera, set Record or Photo Mode
2、video_record_init
Get 3DNR and LDW switch, achieve FB width, height，turn on video0-5 in sequence
3、video_record_addvideo
Check video node bus information，initialize ISP camera or USB camera based on bus information
4、isp_video_init or usb_video_init
Initialize mpath or spath，set power line frequency
5、video_record
Initialize related modules based on isp and usb data flow, including MJPEG decoding, DSP initialization, isp_video_path, isp_video_start, usb_video_path, usb_video_start and ENCODE initialization. Add related StreamPU according to ISP and USB data flow, and add backward level to front notifier, the front data will automatically pass to back class.
Camera begins to take data after Start , data will be transmitted to next level according to related flow, to complete displaying, photographing, coding.

Add StreamPU

Add StreamPU——eg. Photographing

1、Class NV12_MJPG comes from StreamPUBase,

Mainly used for realizing processFrame function to complete photograhing

2、Add NV12_MJPG to YUYV_NV12

Call YUYV_NV12 addBufferNotifier to add NV12_MJPG to its notification chain

3、Call NV12_MJPG Start Function
Call NV12_MJPG start function to run background, waiting for data
4、Exist, remove NV12_MJPG from YUYV_NV12
Call YUYV_NV12 removeBufferNotifier to remove NV12_MJPG notification

Display

Display

1、Display includes GUI Display and Video Display
Via fb win0 display video (NV12) , win1 display GUI (RGB565) ，win1 on top layer will be set to win0 by changing colorkey to transparent
2、How to rotate GUI

gal_engine selects shadow，and shadow selects rkfb，set defaultmode to 854x480-16bpp，set rotate_screen to ccw

3、 How to rotate VIDEO

For only one camera, rotate and zoom to fb via rga

For two cameras, the second camera need to be rotated and zoomed to 1/16 of screen via rga, and then combine two cameras data to one image via rga, to realize PIP display

Using ION

Using ION

1、In order to directly use buffer physical address without copy, ensure efficient processing of each level

2、Use libion

(1) Use ion_open to open a client

(2) Set ion width and height to applied size

(3) Call ion_alloc to apply for ION_HEAP_TYPE_DMA_MASK storage type

(4) Call ion_share to get ion fd

(5) Use ion_get_phys to get physical address for Underlying use

(6) Use mmap to map ion fb menory to virtual address for upper layer use

(7) Exist, call munmap,ion_free,ion_close to release related resource

Q&A

Thanks!