

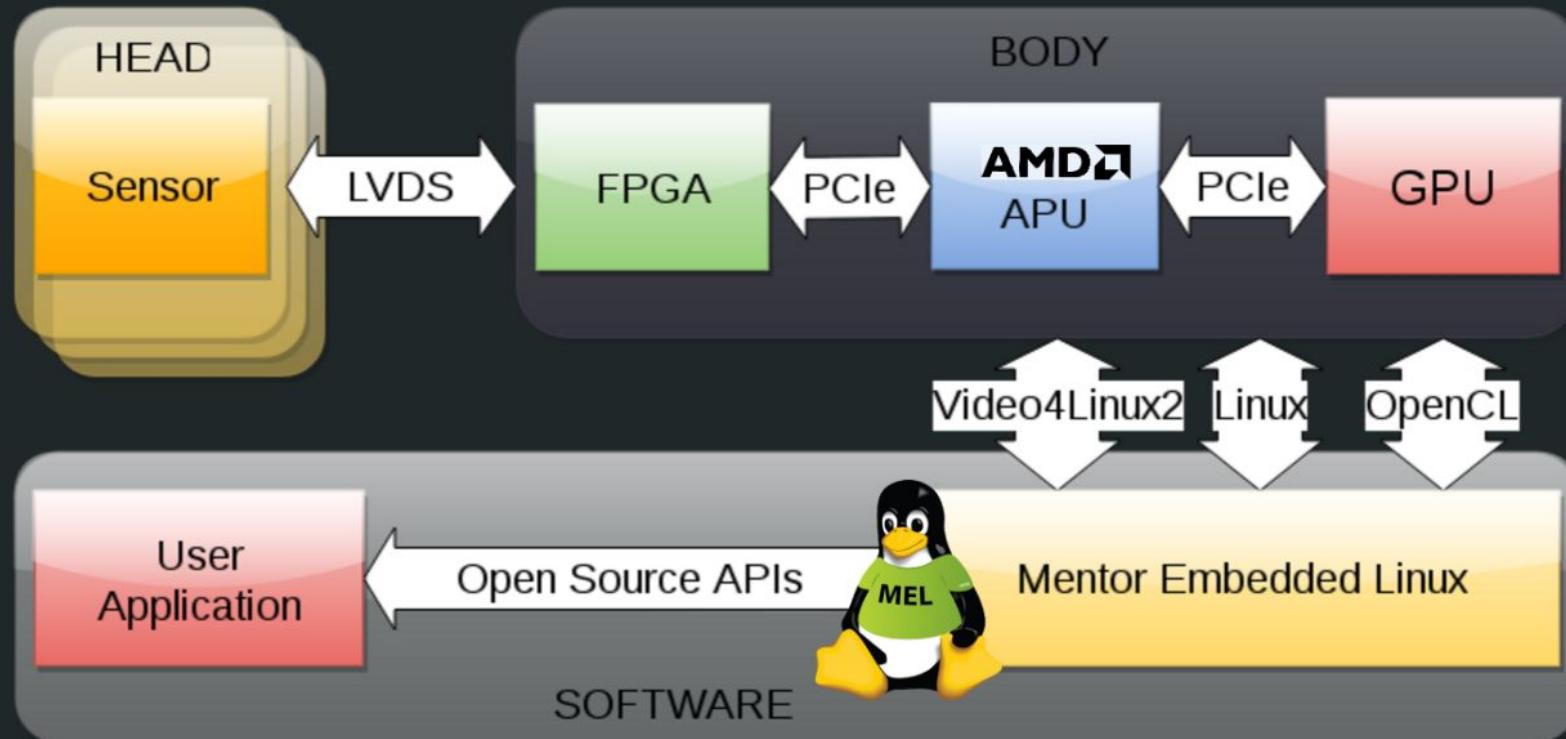
Developing an Industrial Machine Vision Application using Mentor Embedded Linux on AMD R-series SOC with Qtechnology Cameras

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Lead Firmware Engineer
@ribalda

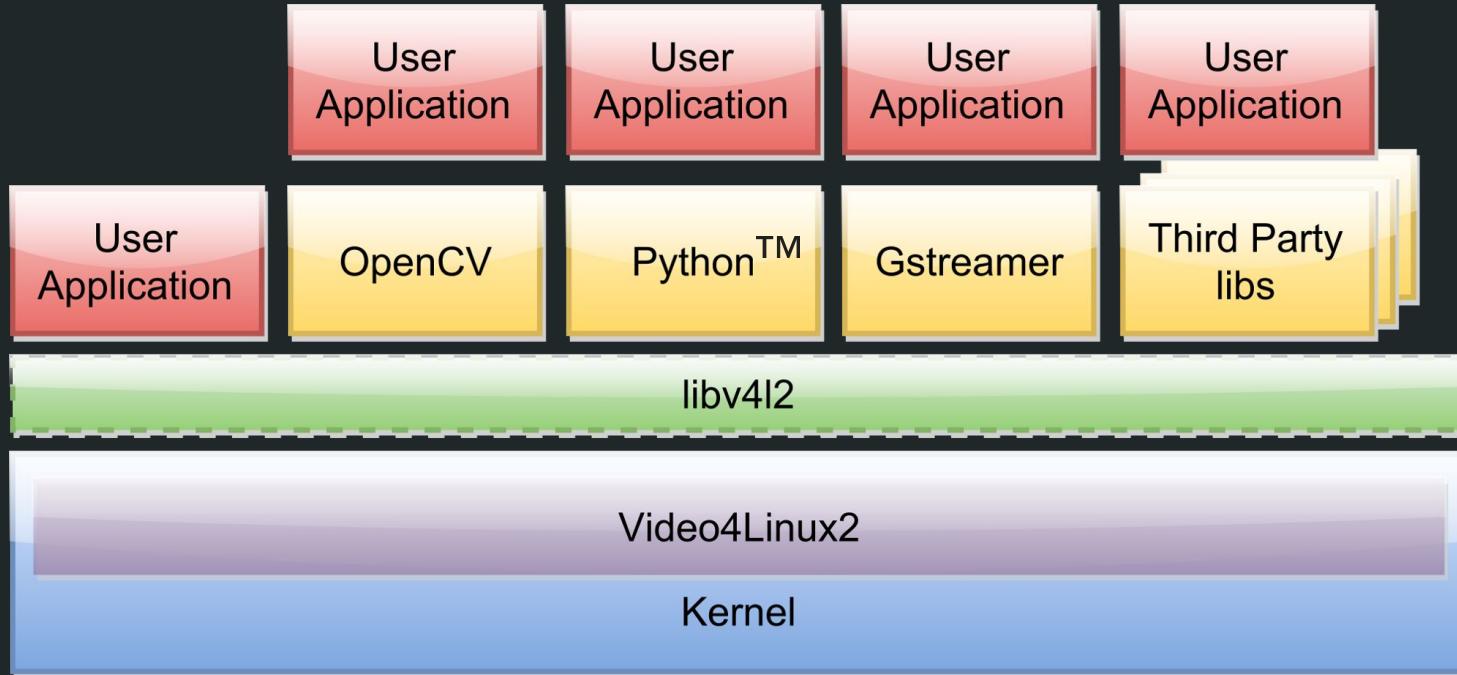
Agenda

- Qtec Camera
- Sensors
- Show me the money!!
- Sourcery Analyzer
- Q & A

Camera Architecture



Software





Sensors

Bio-Sensor

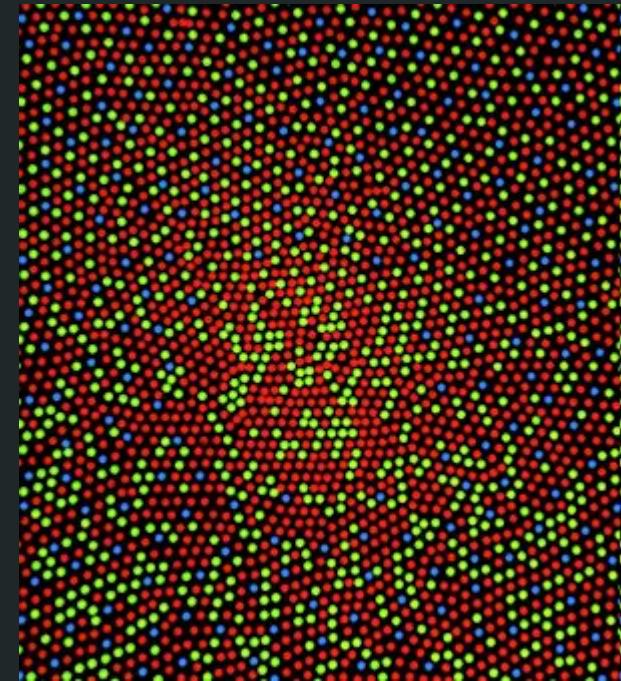
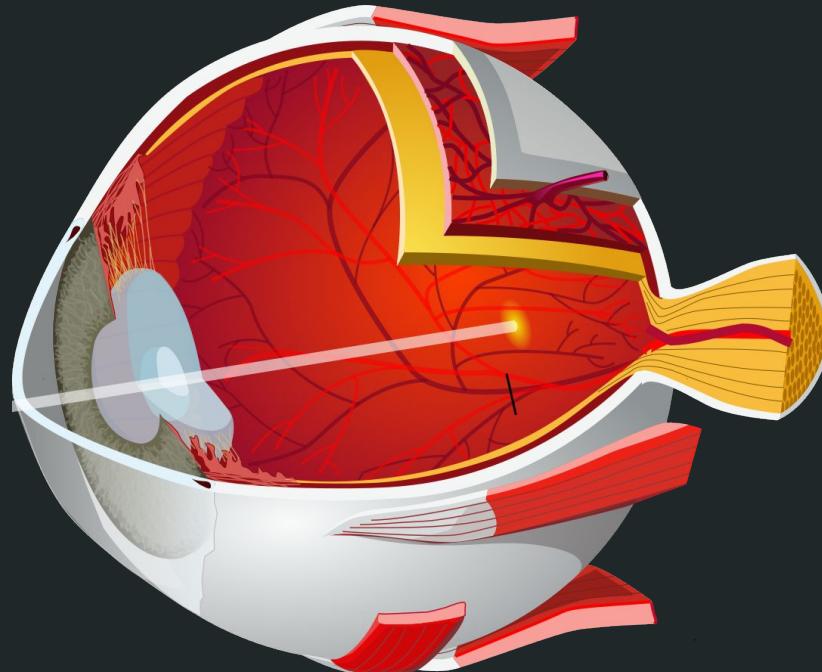


Image Credit: Wikipedia CC BY-SA 3.0

Sensor

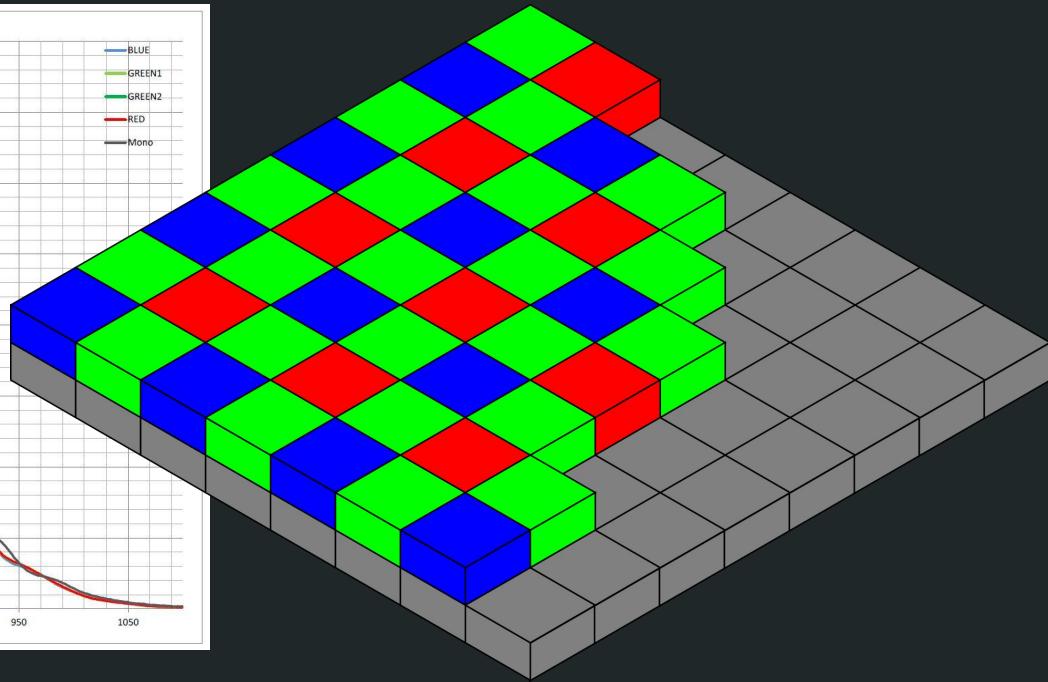
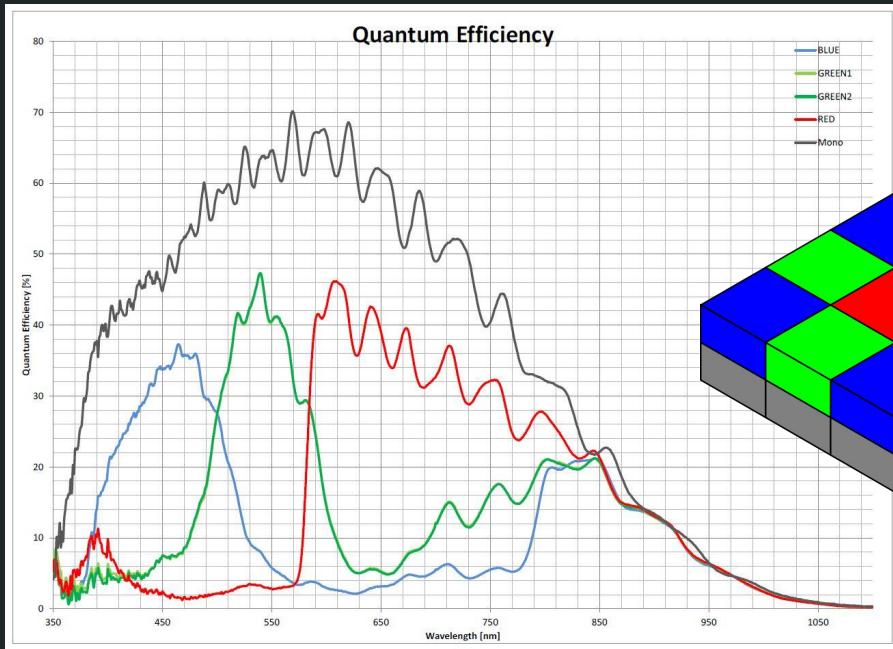
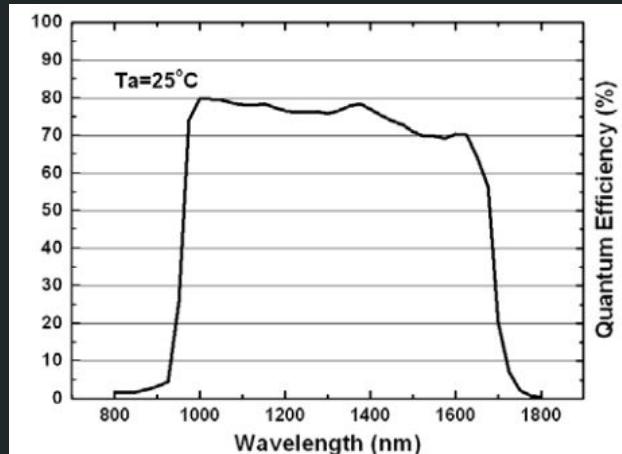
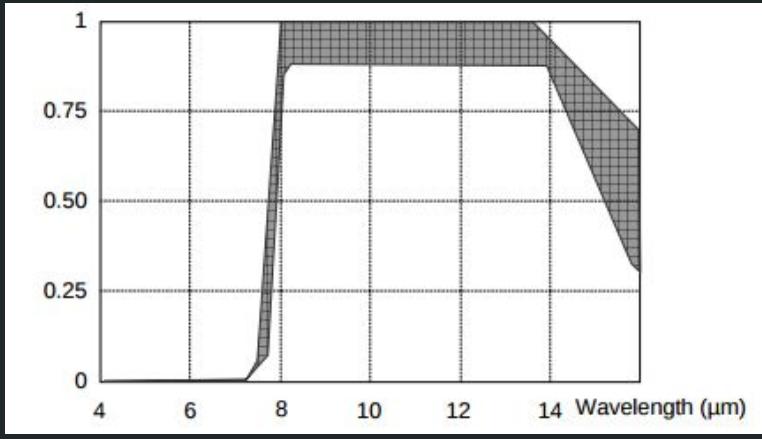


Image Credit: Wikipedia CC BY-SA 3.0

Other sensors



Image Credit: Wikipedia CC BY-SA 3.0





Show me the
money!

UA7147617465

EURO
EΥΡΩ

5



Sensor Selection:



Sensor Selection:



Sensor Selection:



<http://www.new-euro-banknotes.eu/>

EURO BANKNOTES

SECURITY FEATURES

Various security features have been incorporated into all euro banknotes to protect them against counterfeiting. It is very easy to check a euro banknote of either series by using the simple FEEL, LOOK and TILT method.

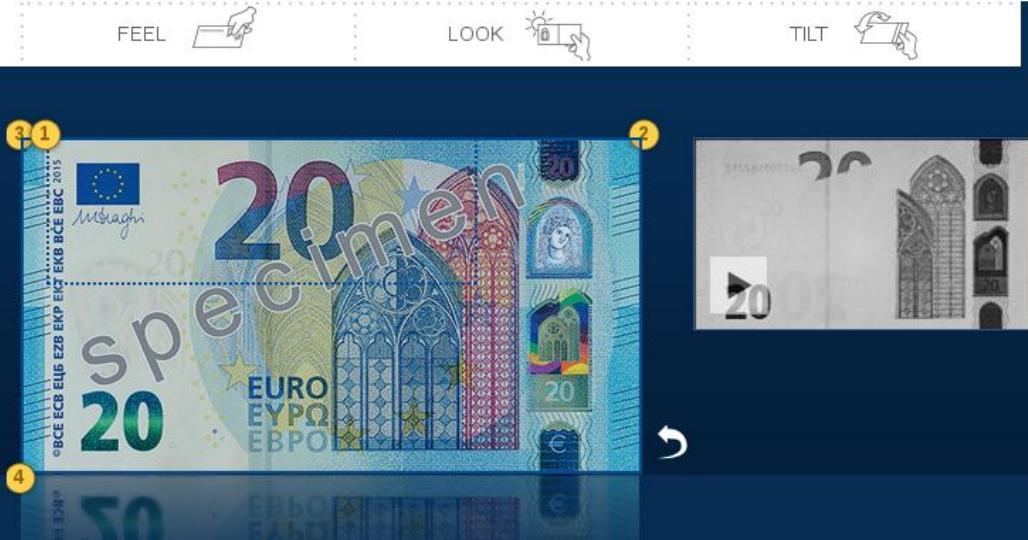
FEEL 

LOOK 

TILT 

ADDITIONAL FEATURES

BACK



4 Infrared properties

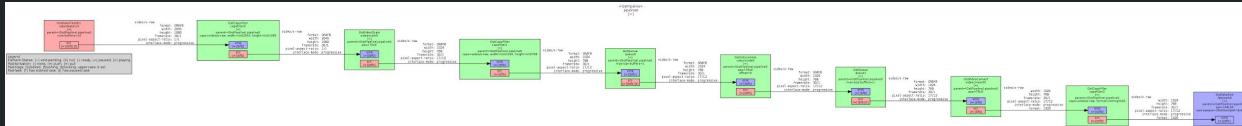
Under infrared light, on the front of the banknote, only the emerald number, the right side of the main image and the silvery stripe are visible. On the back, only the value numeral and the horizontal serial number are visible.



Live demo!

Gstremer

- Pipeline Based
- Hundreds of plugins
- Multithreaded pipelines
- Low overhead
- Good debugging system



```
int main (int argc, char *argv[])
{
    GError *error = NULL;
    GstBus *bus;
    GMainLoop *loop;
    GstElement *pipeline;
    guint bus_watch_id;

    gst_init (&argc, &argv);
    loop = g_main_loop_new (NULL, FALSE);
    pipeline = gst_parse_launch (
        "v4l2src num-buffers=600 ! video/x-raw,width=2040,height=1080,framerate=100/1 ! "
        "euronote !"
        "videoscale ! video/x-raw,width=1024,height=768 !"
        "videoconvert ! video/x-raw,format=I420 ! fakesink", &error);
    bus = gst_pipeline_get_bus (GST_PIPELINE (pipeline));
    bus_watch_id = gst_bus_add_watch (bus, bus_call, loop);
    gst_object_unref (bus);
    gst_element_set_state (pipeline, GST_STATE_PLAYING);
    g_main_loop_run (loop);
    gst_element_set_state (pipeline, GST_STATE_NULL);
    gst_object_unref (GST_OBJECT (pipeline));
    g_source_remove (bus_watch_id);
    g_main_loop_unref (loop);
    return 0;
}
```

Sourcery Analyzer

Live demo!

Results

| | FPS | Latency | Gstreamer change |
|---------|---------|---------|-----------------------------------------------|
| Base | 20 FPS | 45 ms | |
| Resized | 50 FPS | 20ms | videoscale ! video/x-raw,width=800,height=600 |
| Queue | 60 FPS | 400ms | queue |
| Size=1 | 100 FPS | 35 ms | queue max-size-buffers=1 |



More Information

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