Rocketbooth

a photobooth written in Rust

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github.com/dwins/rocketbooth

Boston Rust Meetup, May 23 2018

Why?

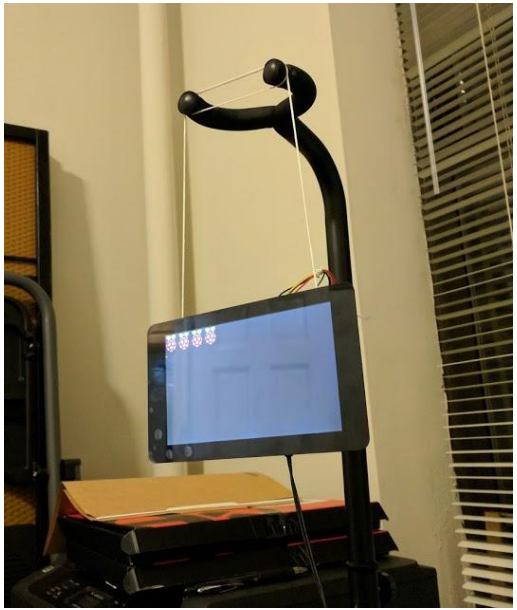
- Got married in December
- Photobooth for the reception
- DIY over renting
- Make it my own

Starting point - hardware

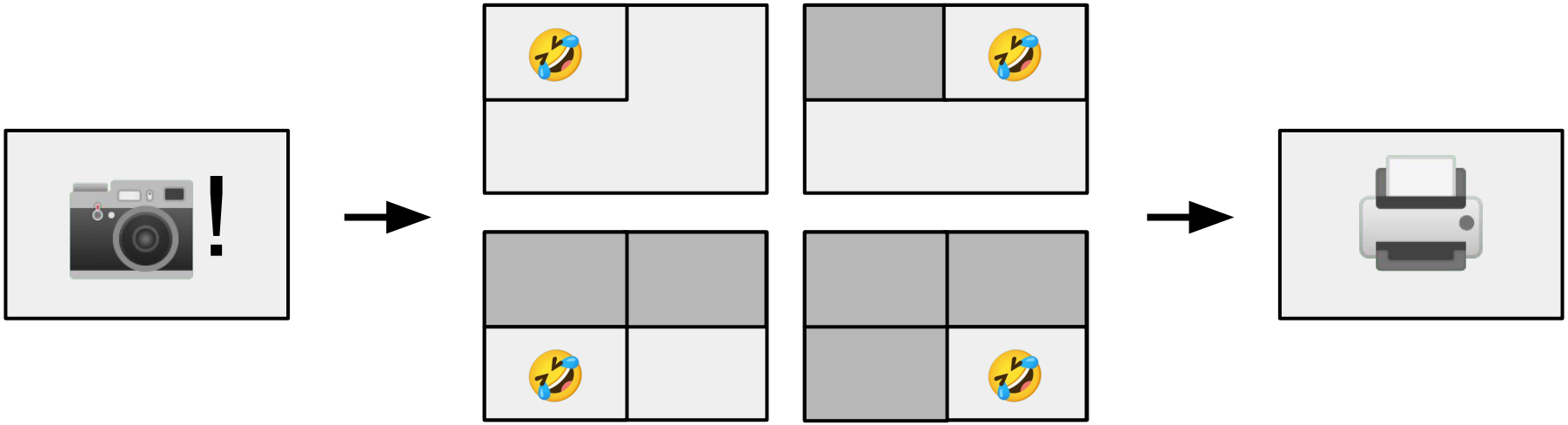
- Raspberry Pi 3B
- Logitech C920 Webcam
- 7” Touch Display
- Canon Selphy printer

Starting point - software

- Raspberry Pi - Raspbian Linux
- Webcam - ffmpeg/v4l2
- Display - SDL, OpenVG
- Printing - CUPS



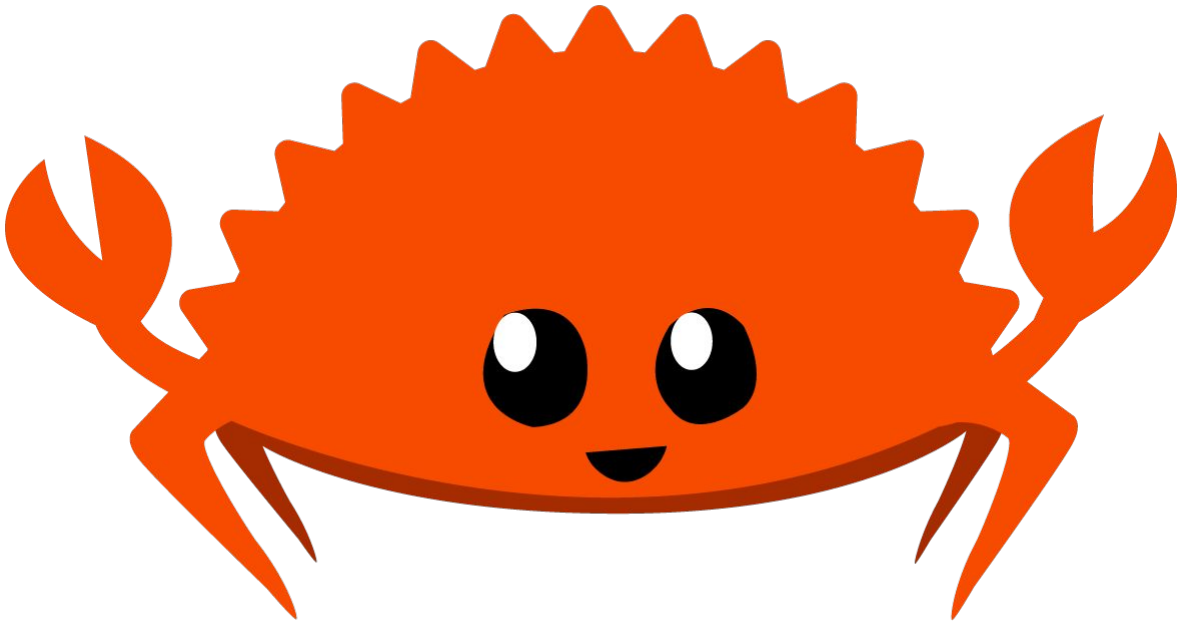
General design (video)




Cravin' Wine
Custom Floors
D&E Development
Davidson, Dr. Eyes
Davco Fireplace

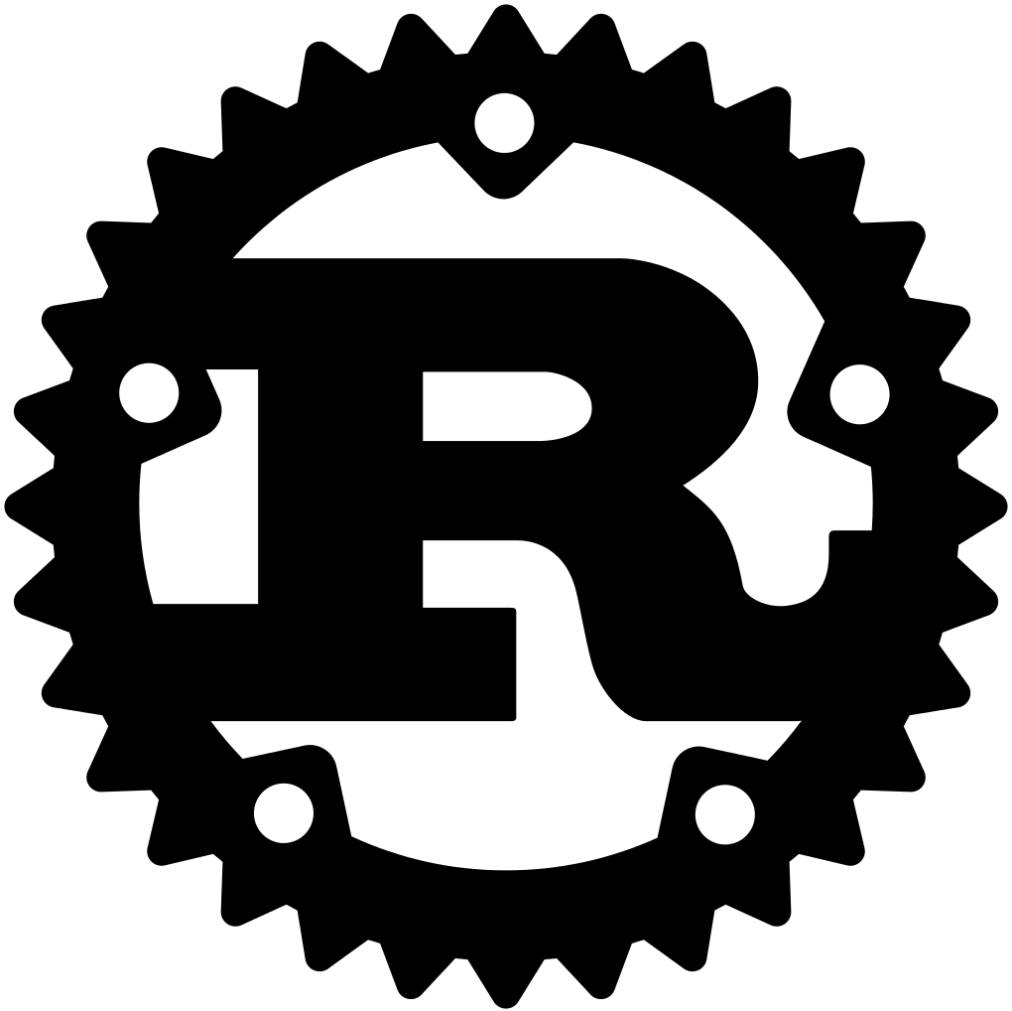
Choosing Rust

- Concurrency
- FFI to C libraries
- Strong type system



Rust expectations

- Easy build tool
- Public package index
- Quick editing feedback



Building for the Raspberry Pi

1. Prototype on a fast computer
2. Cross-compile
3. Transfer code

Prototype - ffmpeg webcam viewer

1. bindgen
2. Container

   Stream*

   Packet* ↔ Frame*
3. Packet* → Codec → Frame*

ffmpeg function wrappers

1. “constructors”
2. impl Drop
3. AVPicture < AVFrame

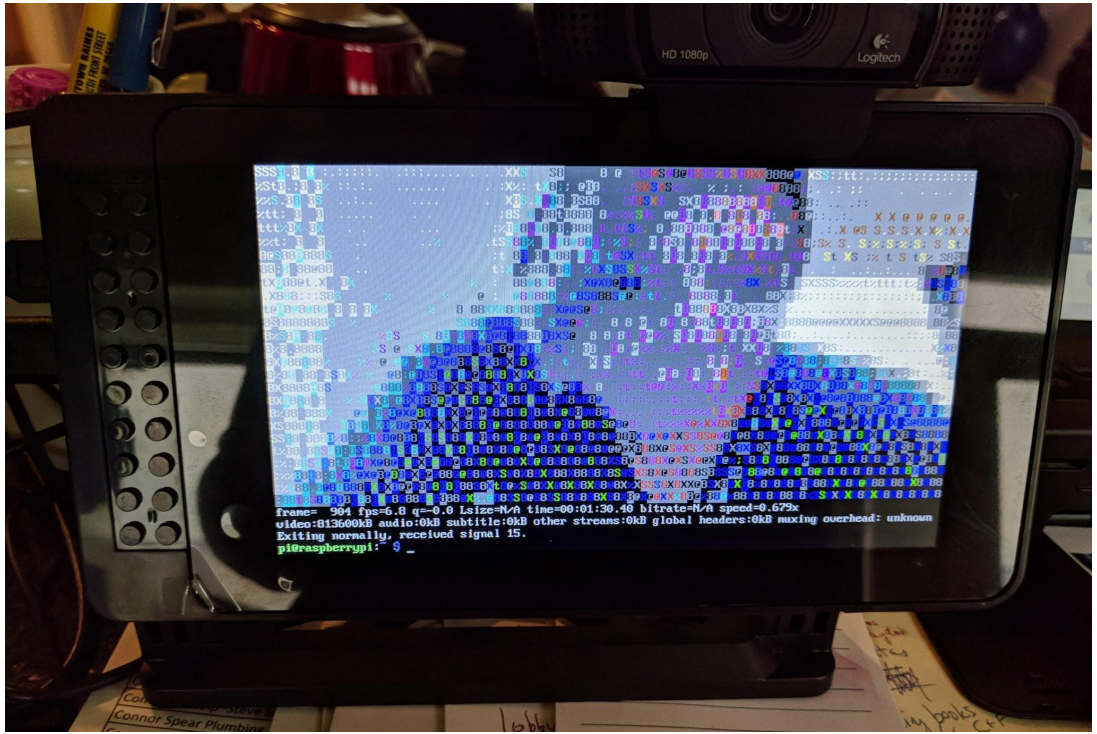
display with openvg

1. Fairly familiar from web <canvas>
2. Handles vs. objects
3. Only available to a single thread

   at a time

Additional crates

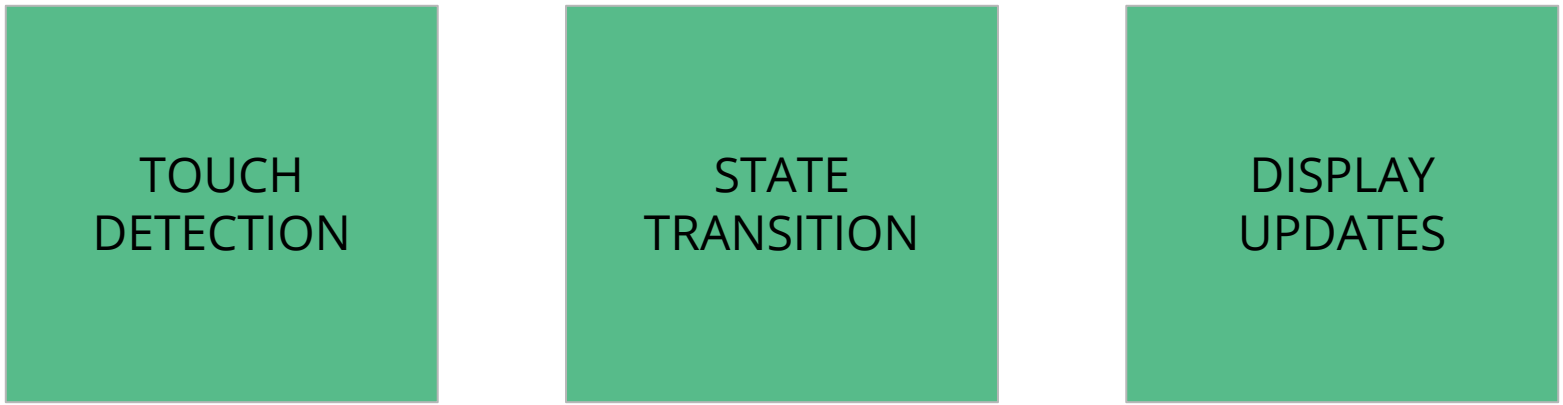
1. config
2. evdev
3. raster
4. cups-sys



Color correction

```
enum AppState {
    Ready,
    Welcome,
    Preview { index: usize },
    WaitForPrint,
}
```

Threads



Video Threads