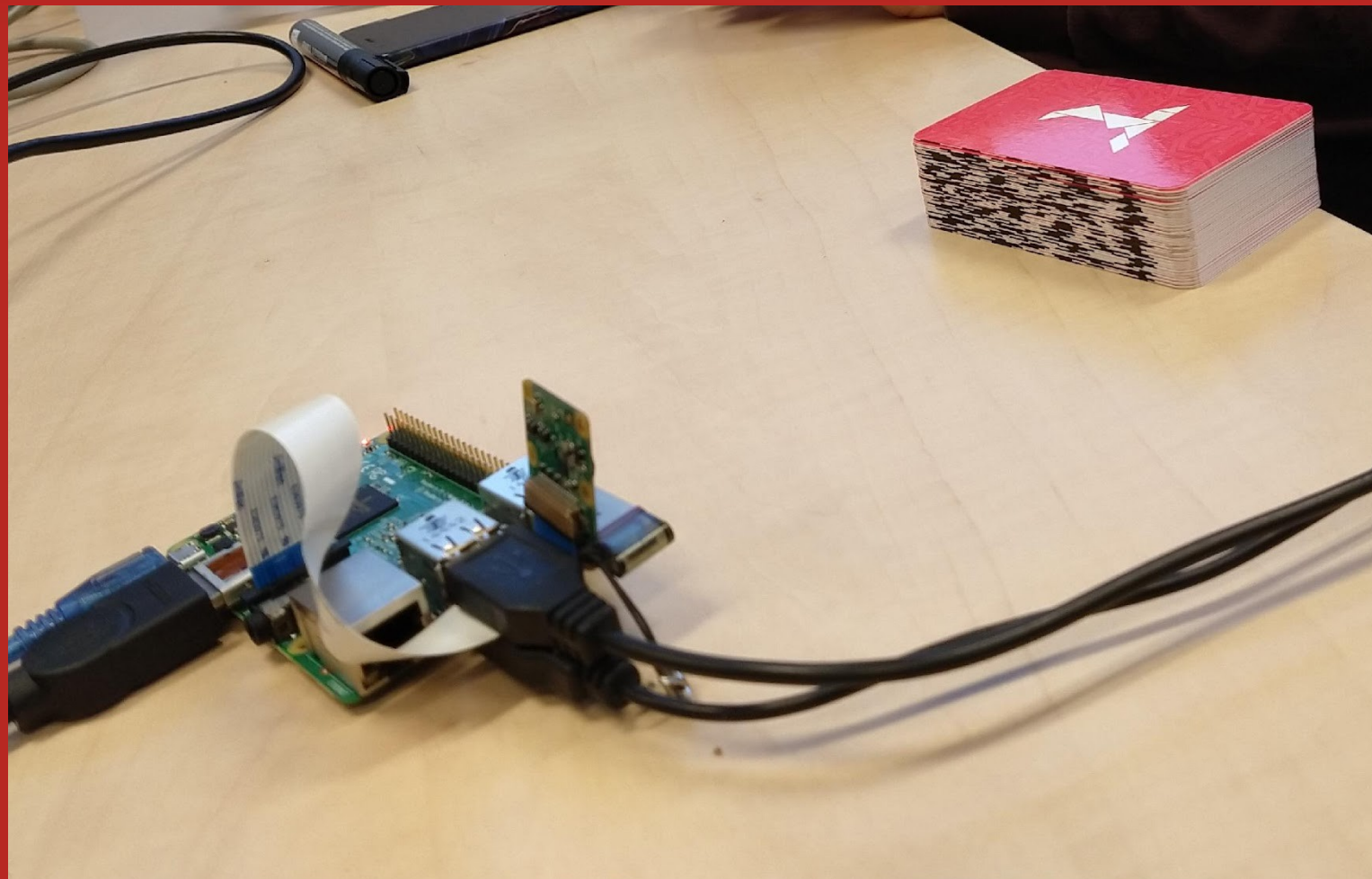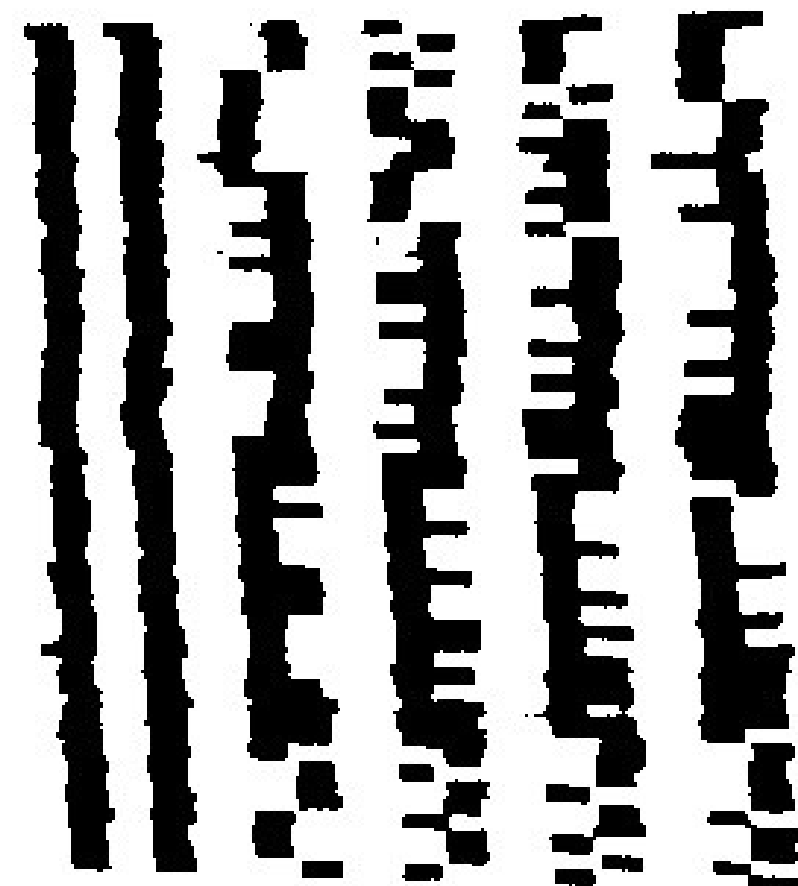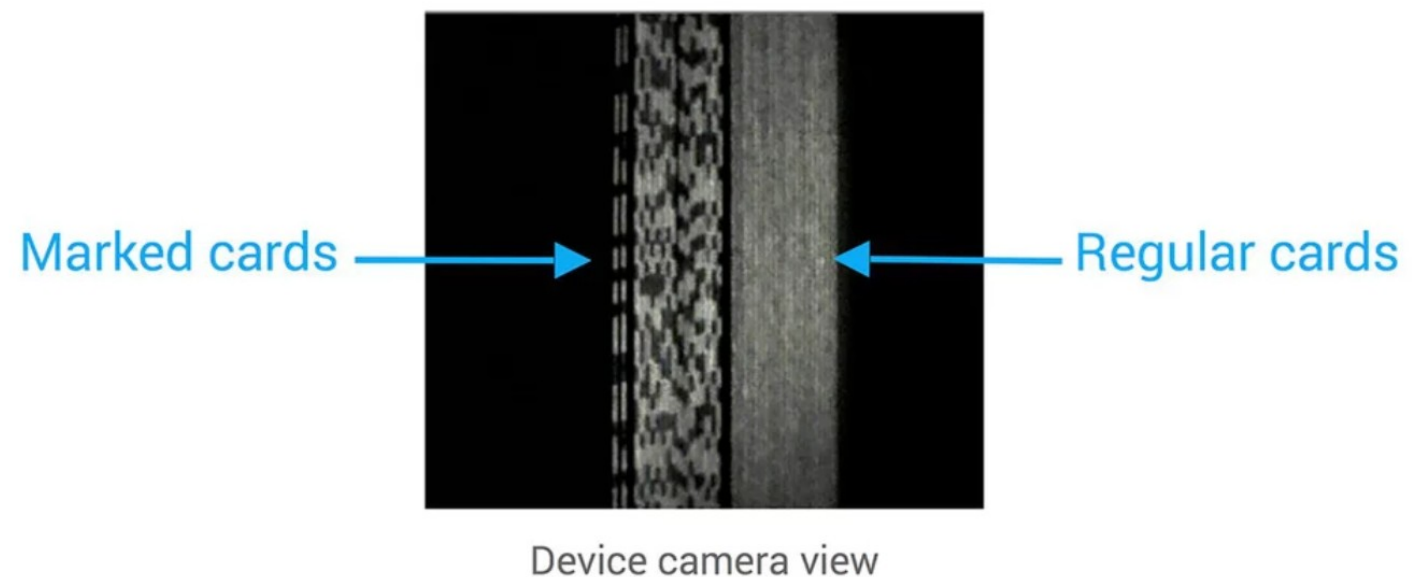# Playing card prediction using IR

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Goal of the project

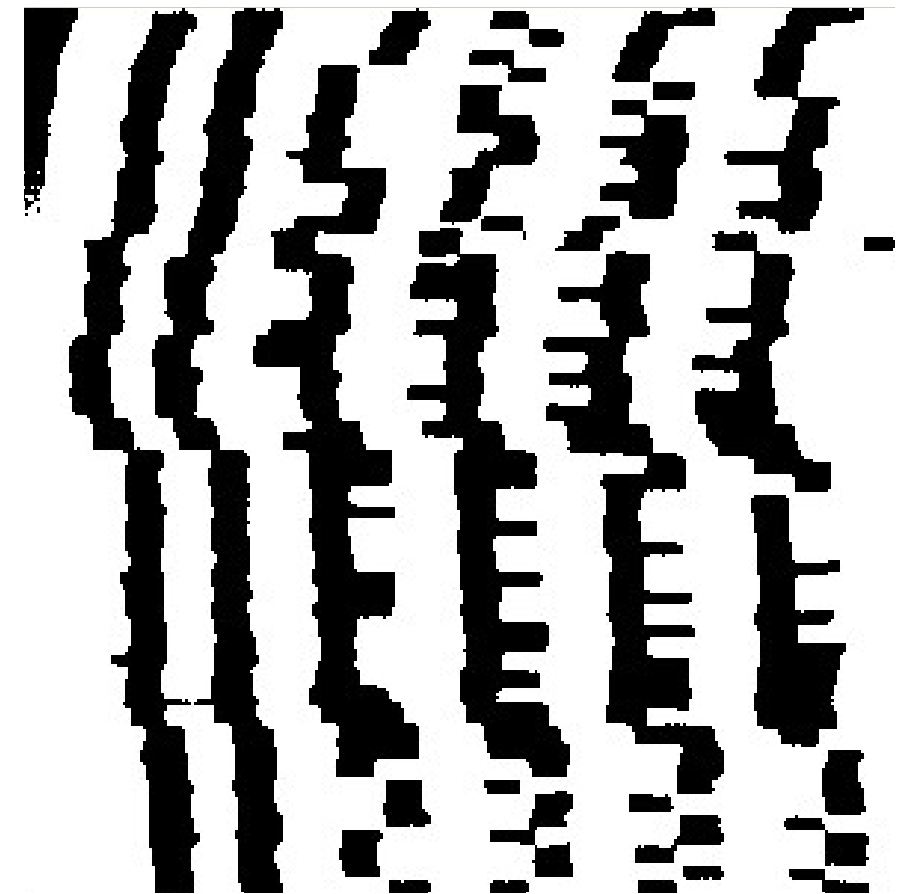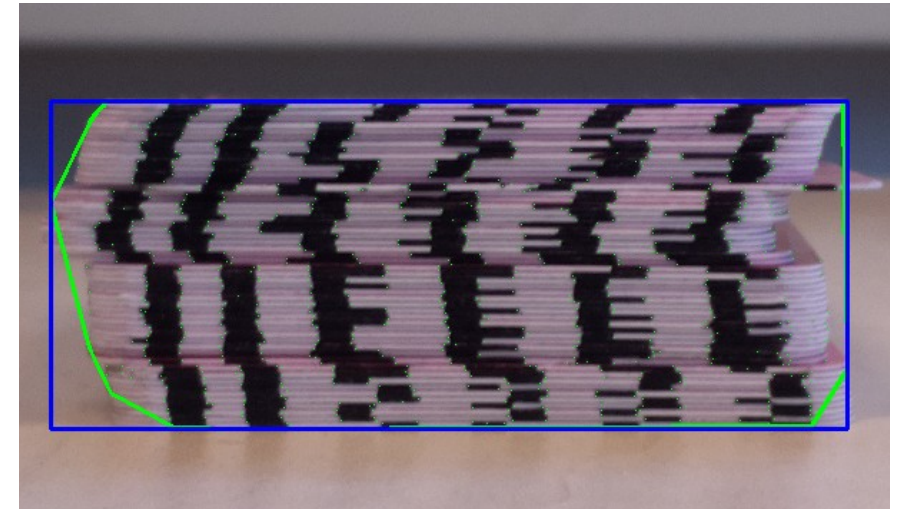Predicting which cards will be drawn from a stack

Device camera view

Source: **Elie Bursztein**
https://elie.net/blog/security/fuller-house-exposing-high-end-poker-cheating-devices/
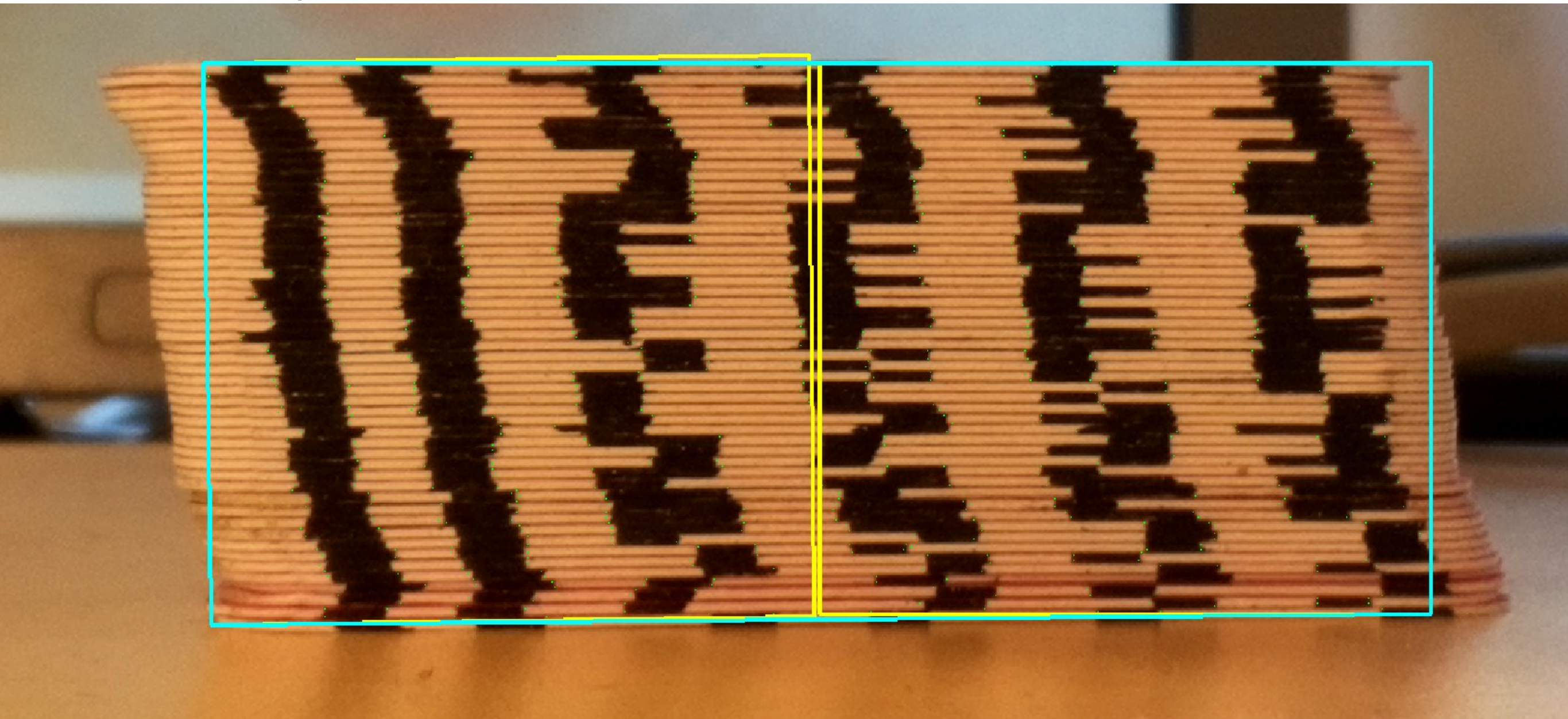
Architecture

- Stack detection
- Card detection
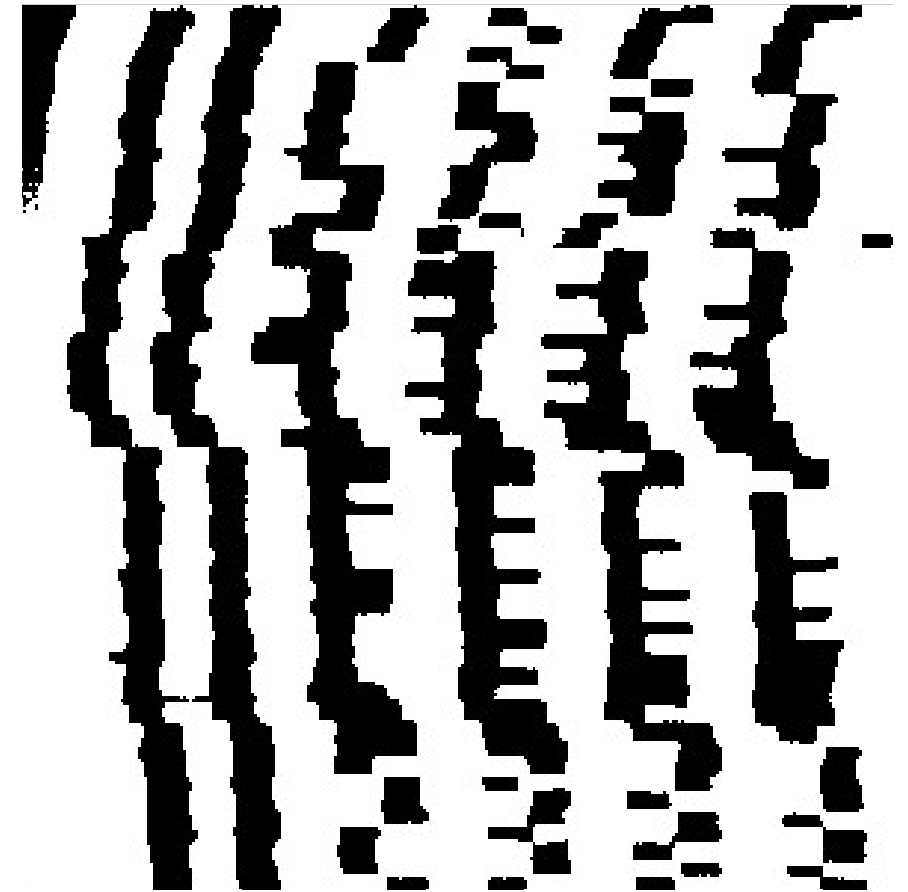- Communication
- Buzzer
- App

Architecture

- Stack detection
  - OpenCV for contrasting point detection
  - Local outlier factor for anomaly removal
  - Perspective transform

Architecture

- Card detection
    - Convert horizontal line to strip lengths
    - Use heuristics to look up card

Architecture

- Communication
  - Rest API supplied by Photon
- Buzzer
  - Photon board with buzzer module
- App
  - Unity 3D

Technical Details

Good

- Stack detection

Less good

- Card detection
- Making it compact

Technical Details

Attempted technologies

- Machine learning
- Confidence scoring
- Card code checksum
- Remote processing

Demo