CoasterDex

by David Pažout and Dagur Elinór Kristinnson

Instance recognition

- instance recognition overviews [1], [2]
- tested and used methods:
  - Contrast Limited Adaptive Histogram Equalization (**CLAHE**)
  - SIFT, **RootSIFT**, ORB and MAC features
  - **coco** and coco/coaster codebooks
  - **basic** and RANSAC-geometric key-point matching
  - updating database

Coaster detection

- Working detection model but code is broken'
- Mostly accurate feature matching, needs bounding box implementation
- Homogenous transformation of detected coaster for angle correction most likely unnecessary
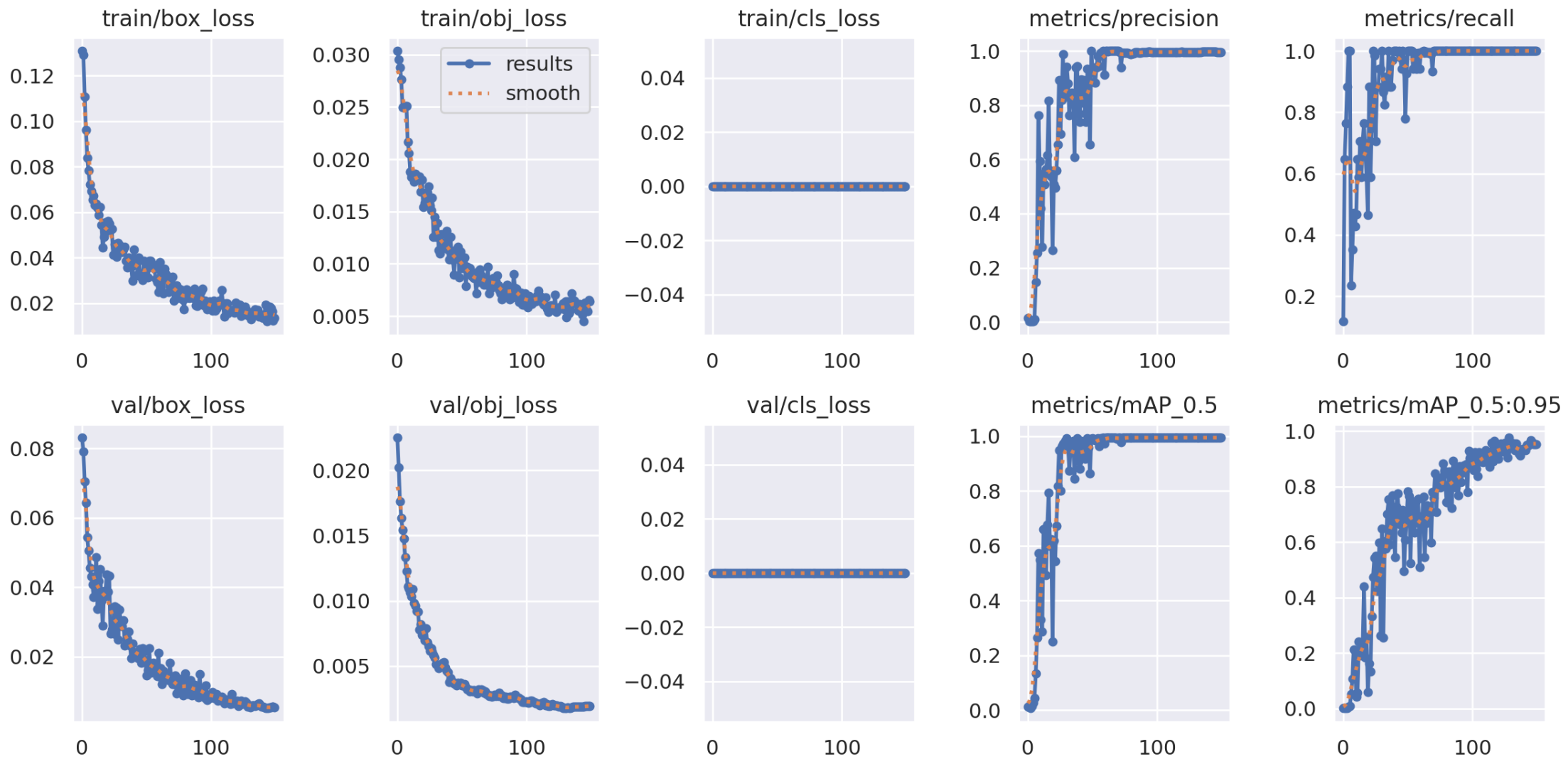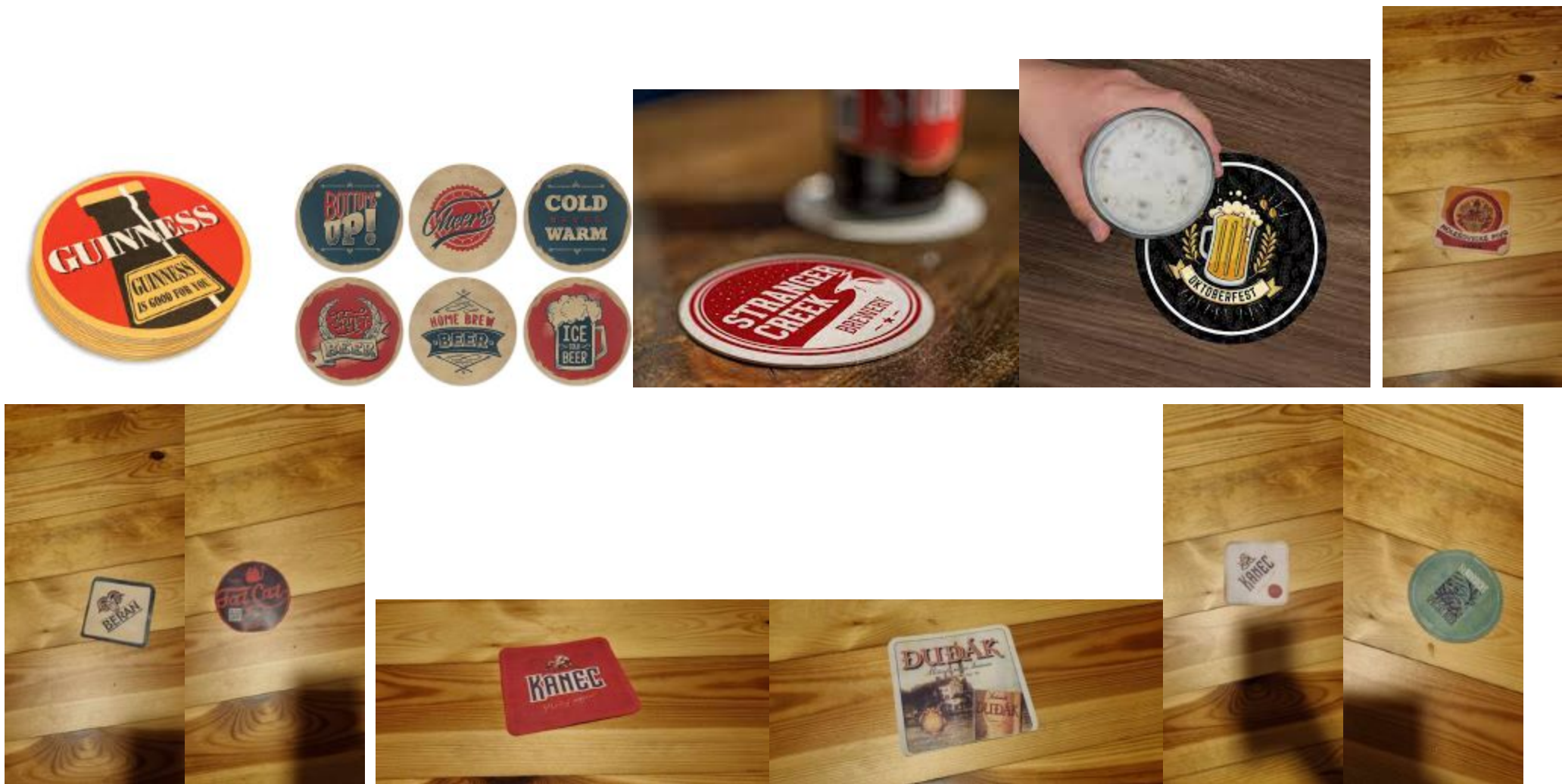
Model training for coaster detection

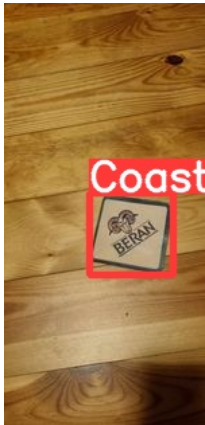## Dataset

- 179 Photos of 120 coasters, 5 empty photos

Training results

Model inference test

Inference test results

Work involved

- Feature matching for instance level recognition

- Integration of existing code

- Model training for coaster detection

- Custom dataset creation

- Model training environment errors took time to resolve

Moving forwards

- Combine modules for full functionality

- Speed optimizations

- Final goal is quick and accurate matching from various coaster types

- Color dependant features/recognition

- Different search for faster coaster addition

- Async call implementation

Thank you for your attention

Questions?

Sources

[1] https://ieeexplore.ieee.org/document/7935507

[2] https://arxiv.org/pdf/2101.11282.pdf