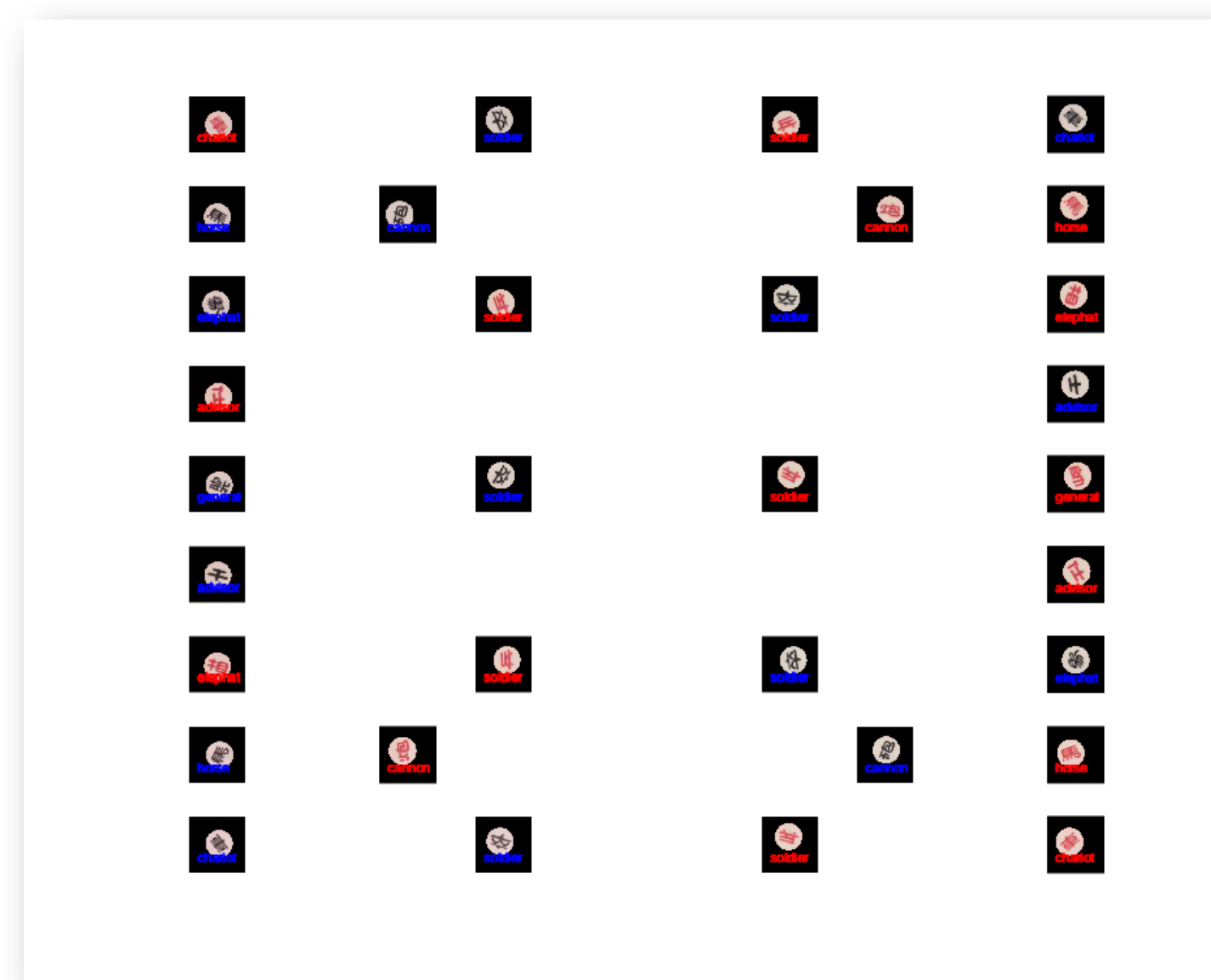
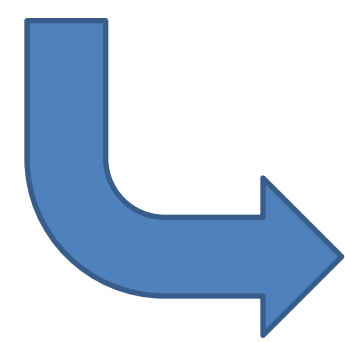
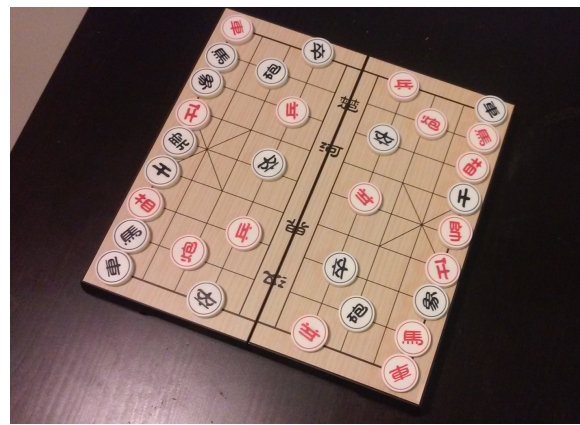


Chinese Chess State Recognition

Yangyang Yu

Department of Electrical Engineering, Stanford University

Objective

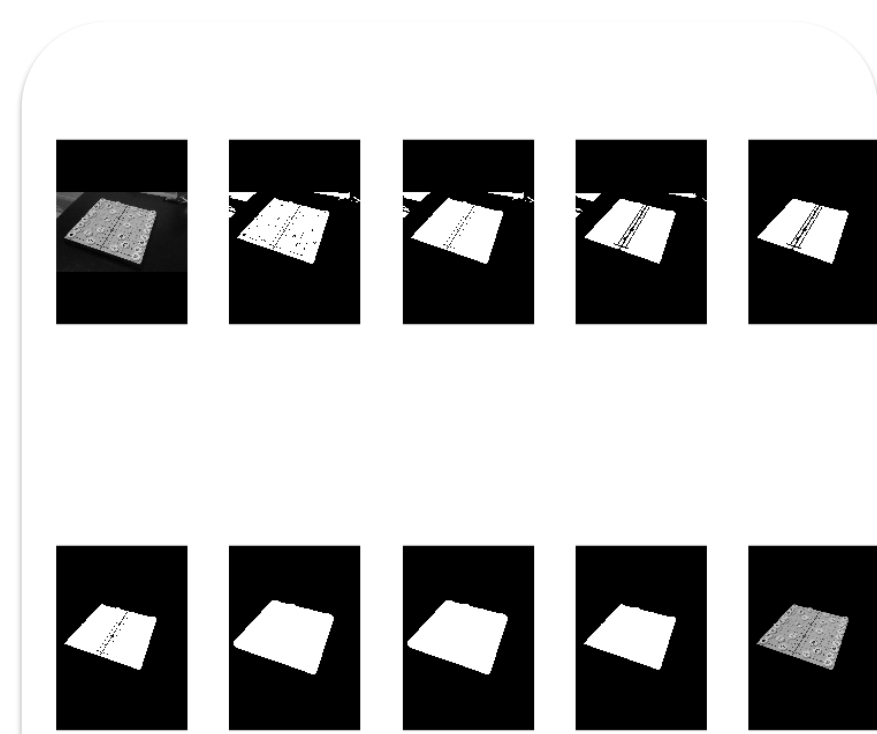


Extract chess piece information from a picture.

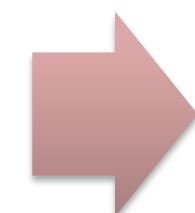
Algorithm

- **Chessboard Segmentation**
 - Otsu's Method + Morphological operations
- **Homographic Transformation**
 - Based on corners found with Hough transformation.
- **Piece Detection**
 - Hough circular transformation + False rejection
- **Piece Recognition**
 - SIFT detector + RANSAC + Color Classification

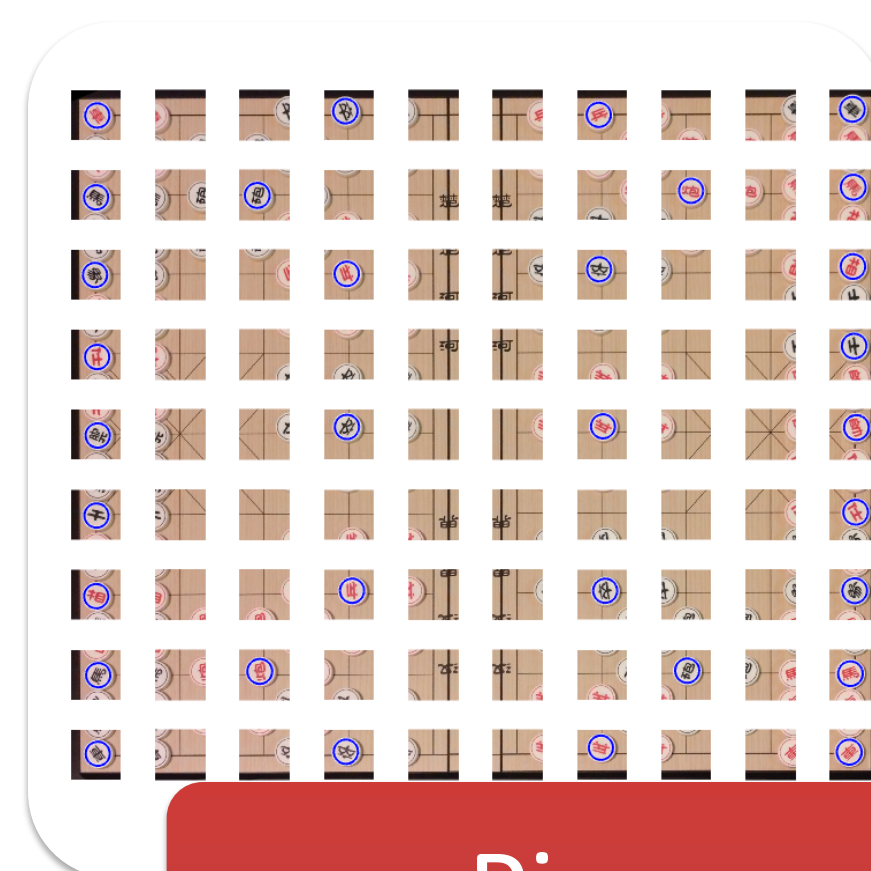
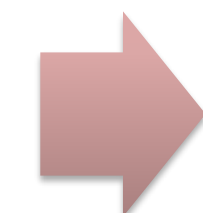
Work Flow



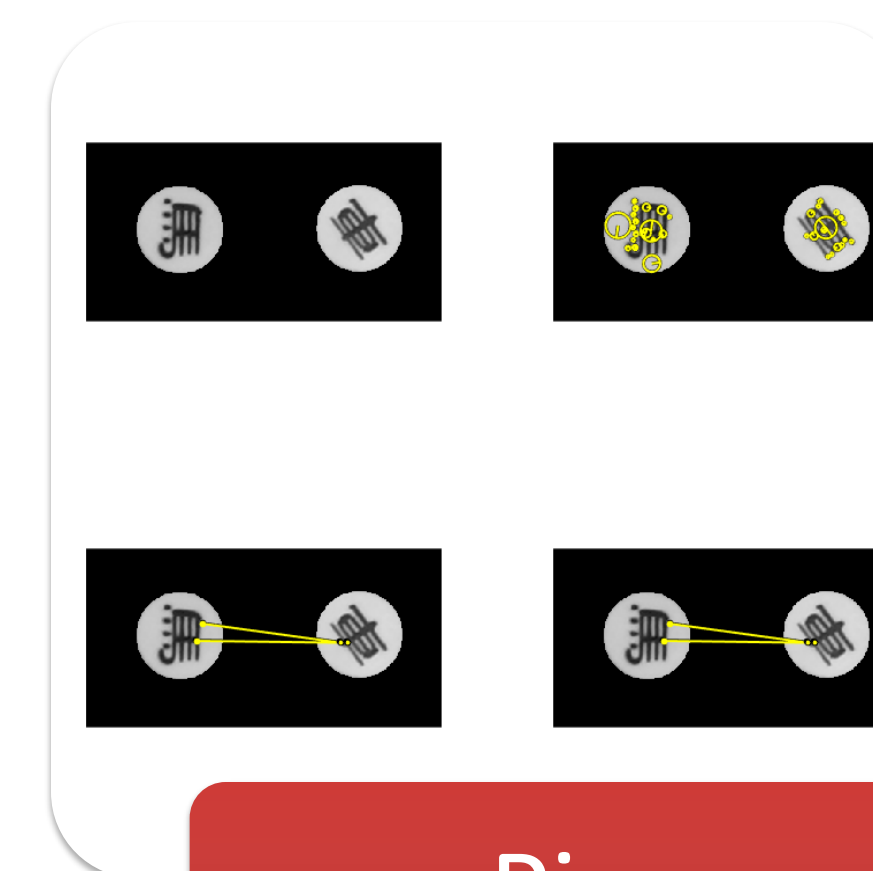
Chessboard Segmentation



Homographic Transformation



Piece Detection



Piece Recognition

Future Work

- **Better chessboard segmentation algorithm for more robust results.**
- **Implementing the algorithm completely on an Android device.**