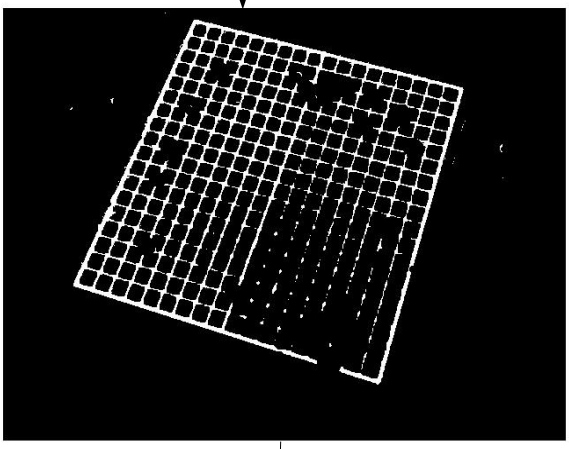
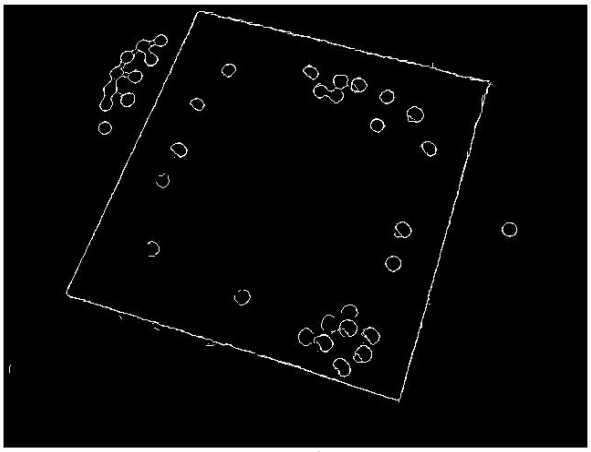
Finding the grid

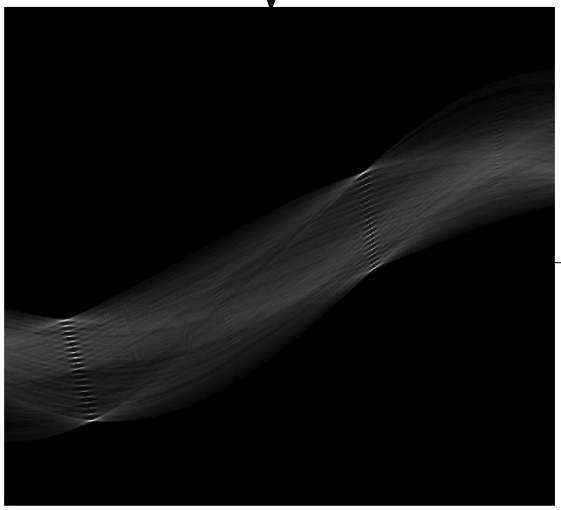
Filter lines

Filter board edges



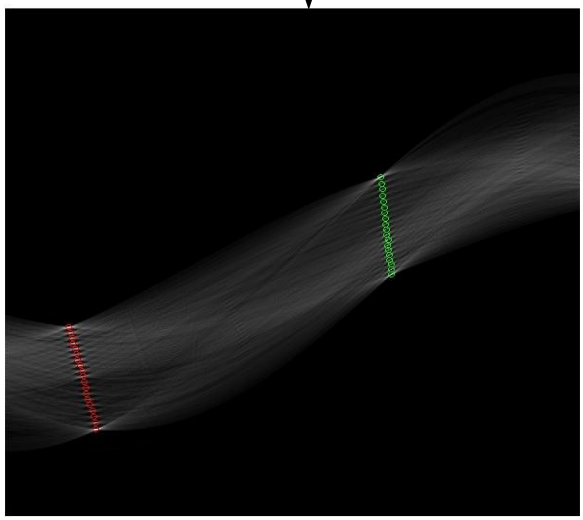


Hough transform



Bright peaks
corresponds grid lines

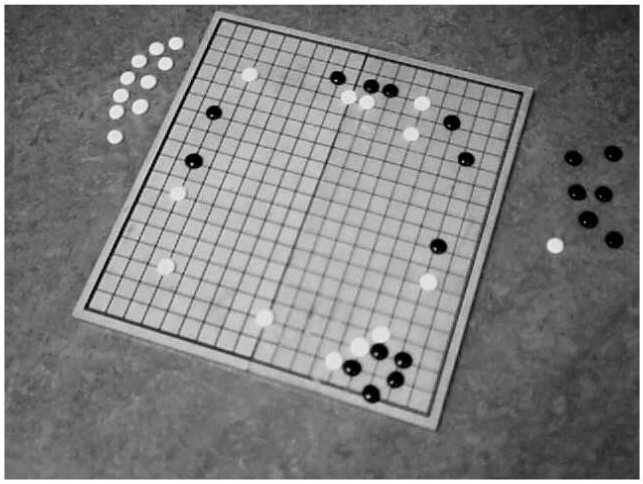
The four bright peaks
corresponds to the edges



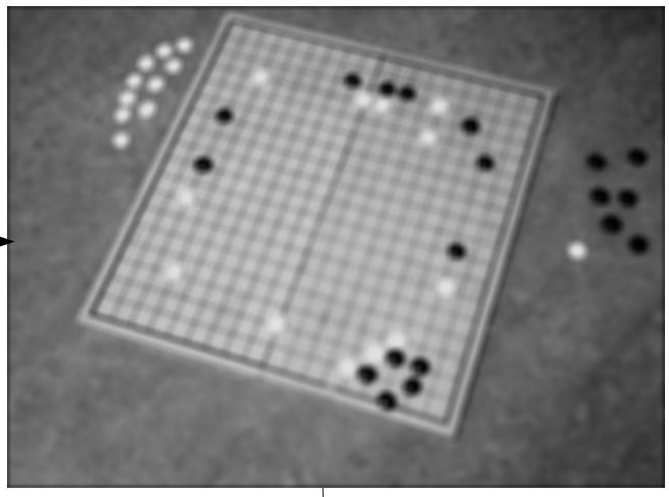
Searching for grid lines
between edges of the board.
(in hough space)

Using findRegionalMax to
locate board edges as well as
grid lines between them.

Finding and determine number of stones

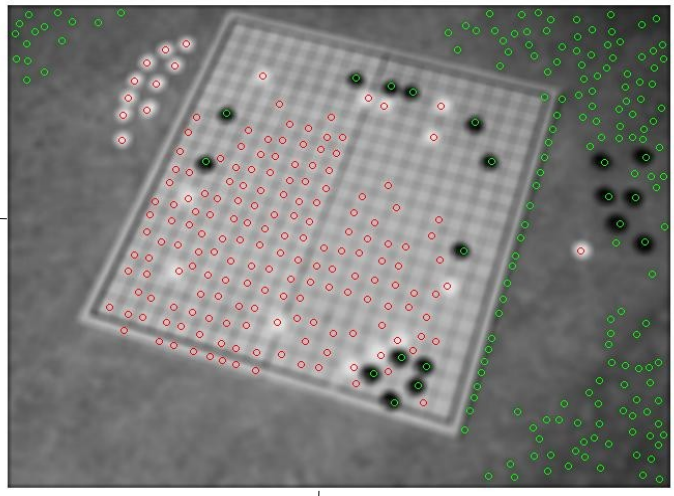


Filtered with gaussian filter

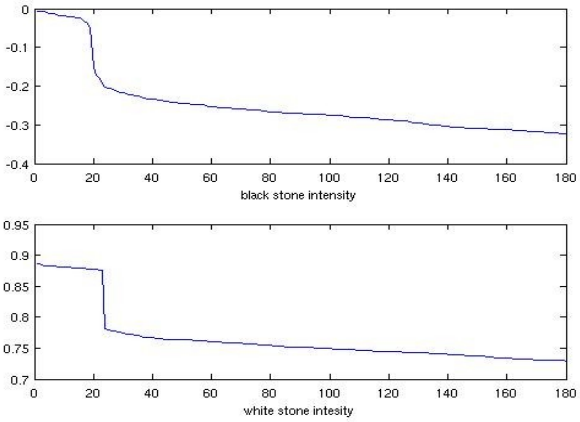


Find regional max and min (the 180 most extreme of them each)

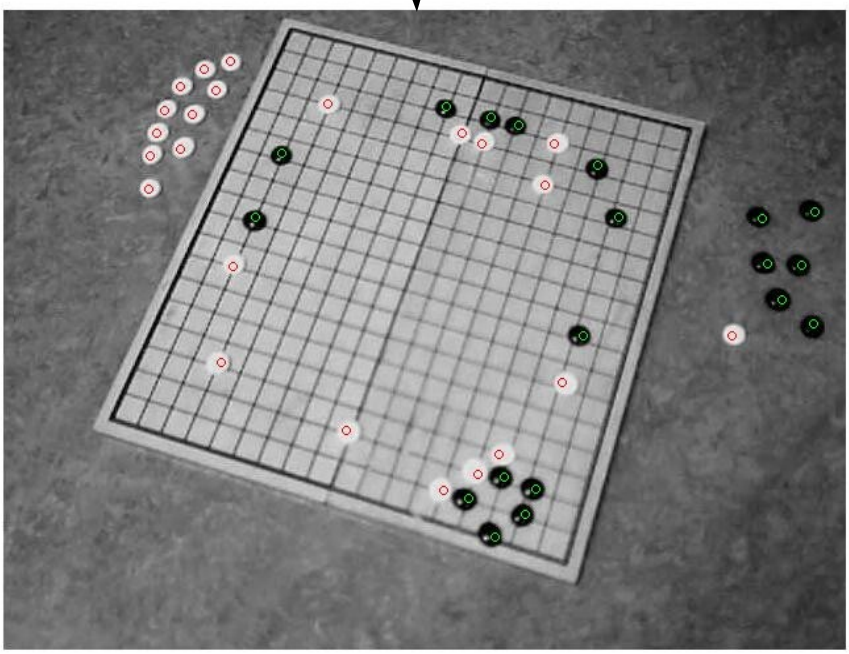
Stone candidates



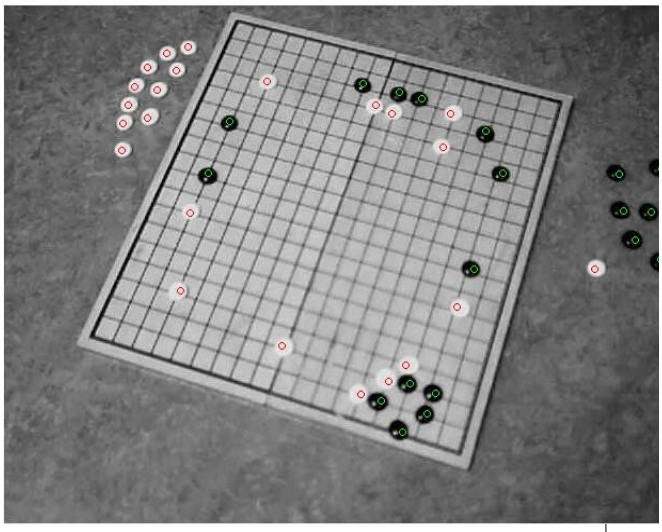
The intensity of the stones (sorted). Largest jump denote limit between stones and background/board

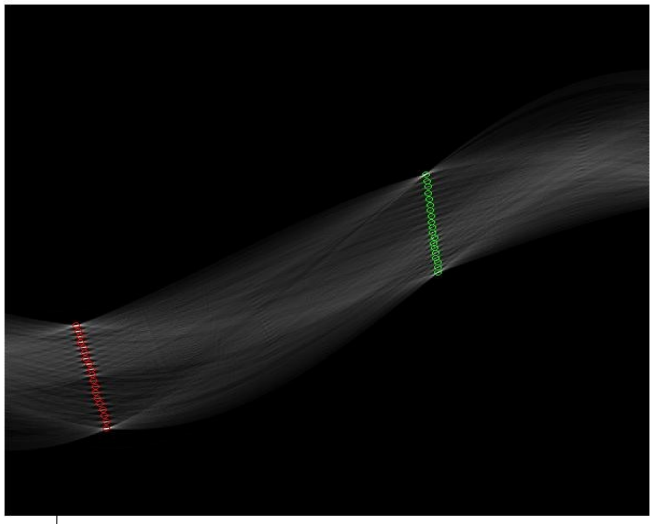


Detected stones



Finding coordinates of the stones





Finding the line that has the smallest perpendicular distance to each stone. This is done for both set of lines which gives coordinates. Stones that are not close to any of the lines are determined to not be placed on the board and are called captures.