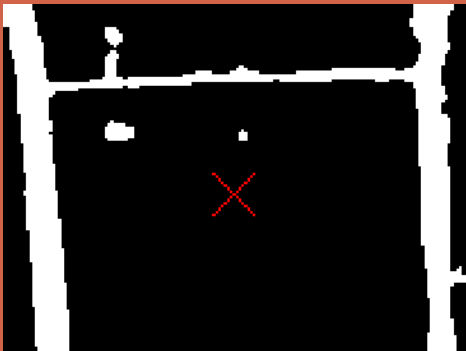
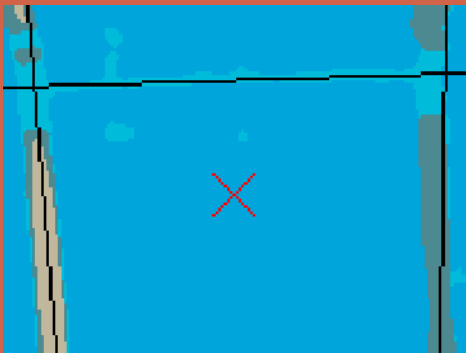


Vision: Requirements

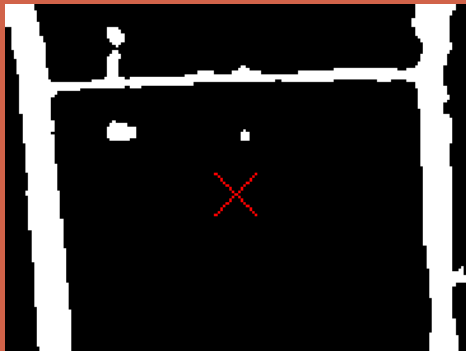
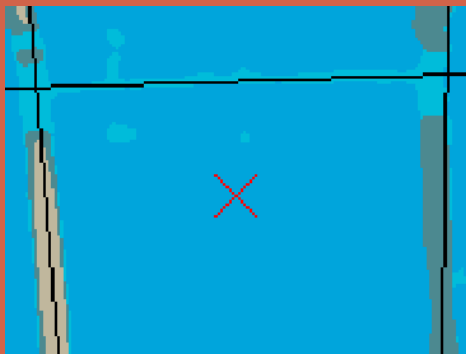
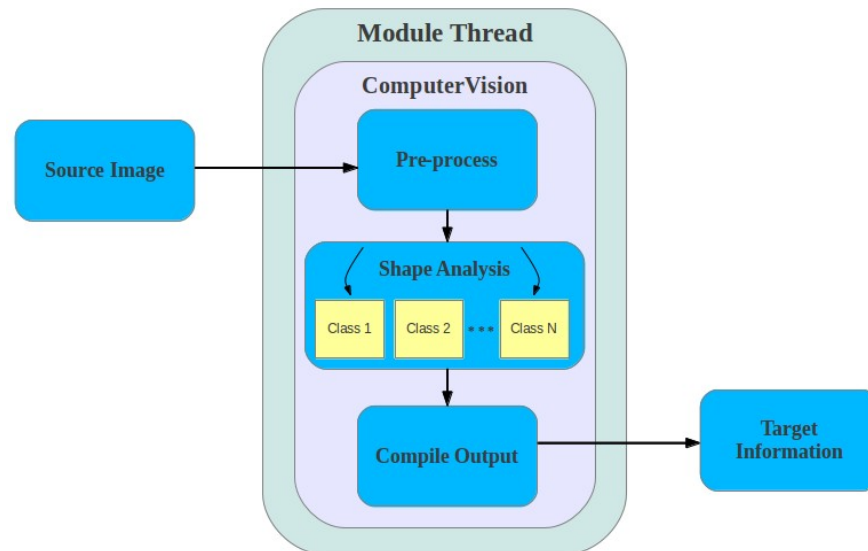
- Input:
 - Static image
 - Command + options
- Internal:
 - Runtime verification
- Output:
 - Location of object (concrete)
 - Inferred information about surroundings (abstract)
 - Robust against changes in lighting, occlusion, object orientation



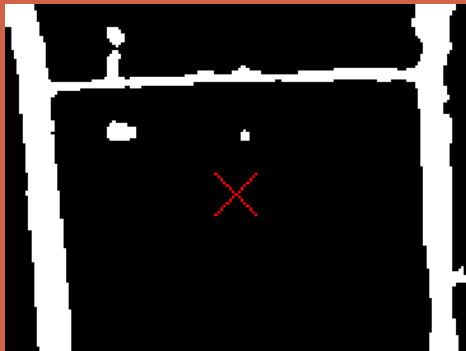
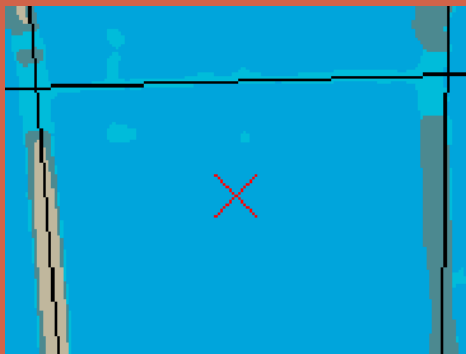


Vision: Structure

- Tasks broken down to form modular structure
- Multiple algorithms operate (effectively) in parallel
- Reliability increased by averaging results
- File structure allows multiple developers to devise new algorithms



Vision: Algorithms



- Color pre-processing
 - Color transformations (RGB - HSV, L*a*b*)
 - Color lookup table
 - Static thresholding
 - Iterative segmentation
- Shape pre-processing
 - Connected-component labeling
 - Hough transform (linear, circular)
- Shape processing
 - Line set information (high-level encapsulation of linear Hough transform)
 - Feature recognition (SURF)
- Output compilation
 - Object position, orientation
 - Additional information