

ArUco Markers Dictionary Support

Revision: 3

INTERNAL BOUNTY

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Awarded To:

Abstract:

[ArUco markers](#) are a popular fiducial/marker/tag. They can be found integrated into ROS and OpenCV. They share many similarities with BoofCV's binary marker. In fact BoofCV already includes all the code you need to detect an ArUco marker. The only difference is the very last step where you decode the marker's ID number! This task is to add the capability to read ArUco markers of any dictionary inside of BoofCV.

Completion Criteria:

- See [Bounties](#) page for general rules/conditions
- Create code which can generate/read arbitrary dictionaries like ArUco
- Select most popular dictionaries and get approval of selection from lead BoofCV developers
- Generate example images for markers which use those dictionaries and show that your code can detect those markers
- "Unit Test" Suggestion
 - Dictionary generator tester
 - Test image decoding by creating a synthetic image
- Regression test where you run a series of test images through ArUco save the results to a file, then have BoofCV detect the markers and compare it to the saved ArUco

This task will heavily leverage existing code in BoofCV. The best place to start is the source code for a binary marker, see the class [DetectFiducialSquareBinary](#) and the processSquare() function. The encoded binary number can be found in the 'classified' array. thresholdBinaryNumber() computes that binary number and should be modified so that ambiguous values don't cause it to abort. ArUco can handle bit flips.

You might want to extend that class or create a copy of it and mess with it as you like. The creation of dictionaries will require reading the [ArUco paper](#) (their website has a PDF you can download) and looking at it's [source code](#). Please don't just do a mindless port of their entire source code. It will be inefficient and you will not own the entire copyright.

If you need help understanding BoofCV's code and how we envision integrating an ArUco reader in please ask questions on the discussion board!