

Global Context Descriptors for SURF and MSER Feature Descriptors

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Stuff I care about...



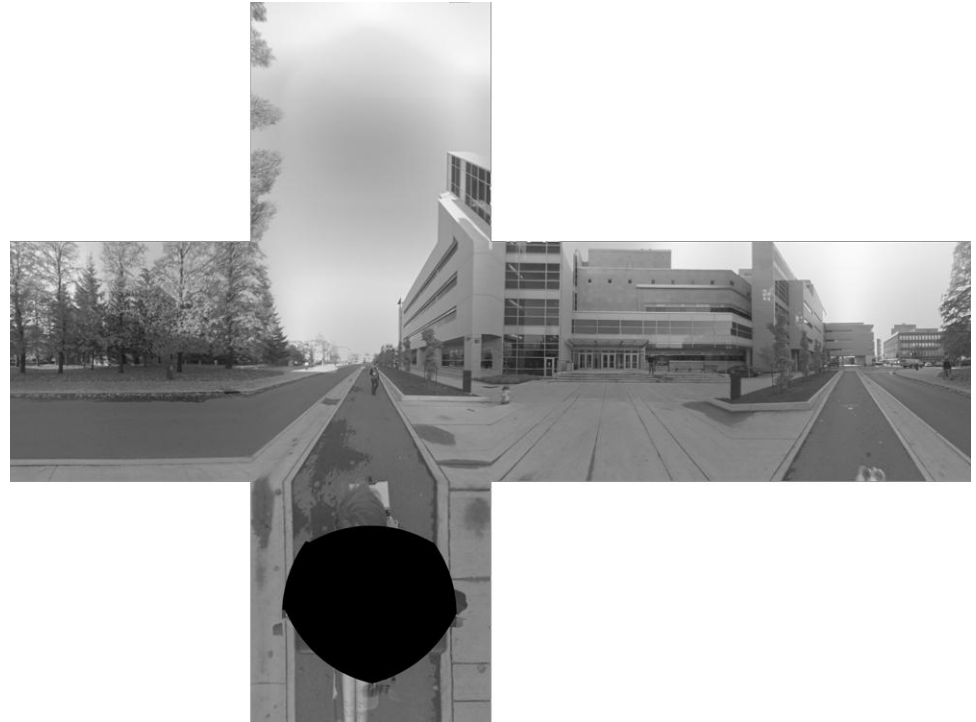
Learning

Stuff I care about...



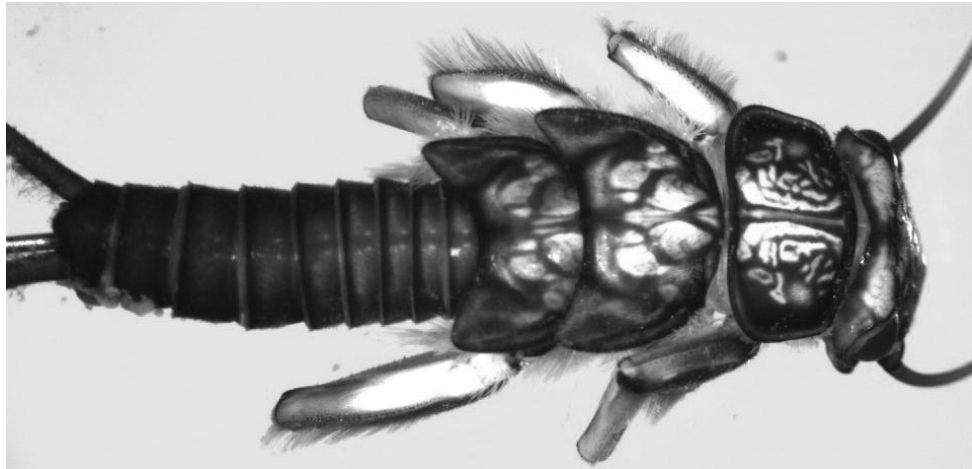
Augmented Reality

Stuff I care about...



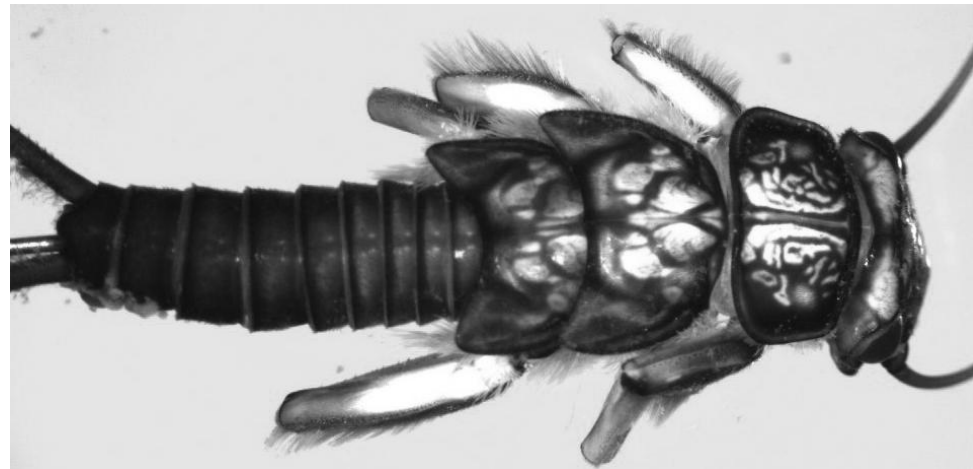
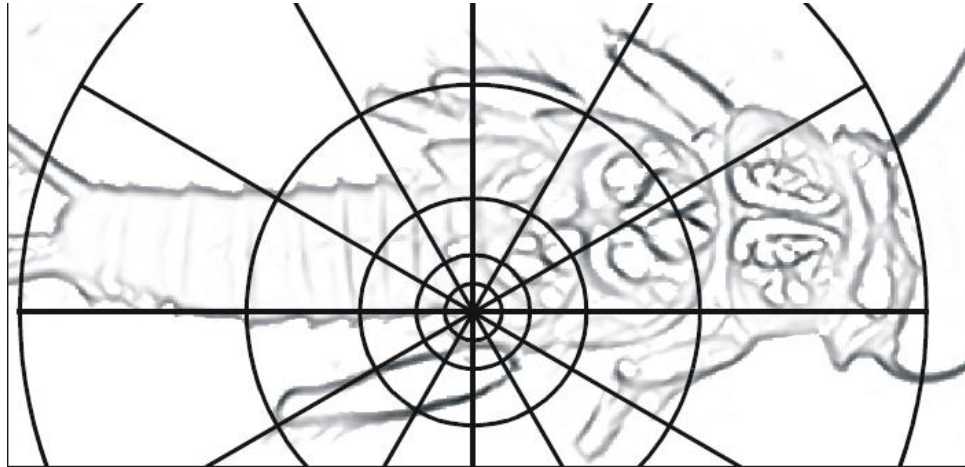
Matching Panoramas and Photographs

SIFT with Global Context



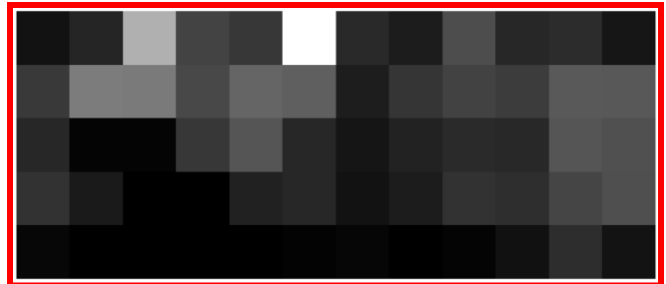
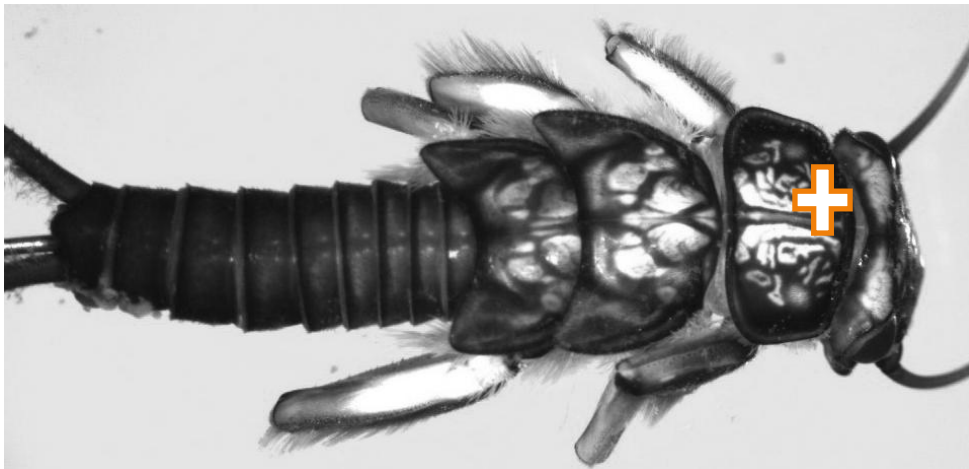
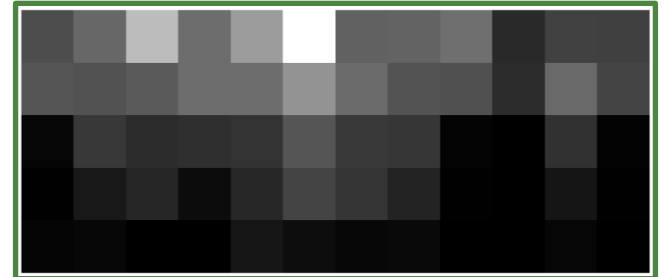
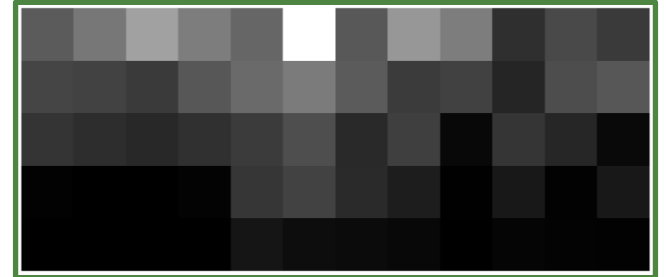
Mortensen, Deng, Shapiro (2005)

SIFT with Global Context



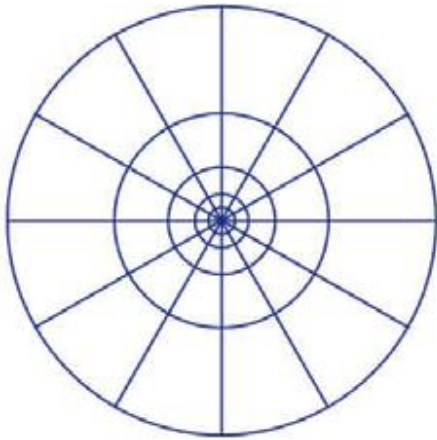
Mortensen, Deng, Shapiro (2005)

SIFT with Global Context



Mortensen, Deng, Shapiro (2005)

Global, But More Local



Li and Ma (2009)

Global, But More Local



Li and Ma (2009)

Global Context for SURF

Pretty much the same as SIFT

Global Context for SURF



1. Find SURF points with SURFmex

Global Context for SURF



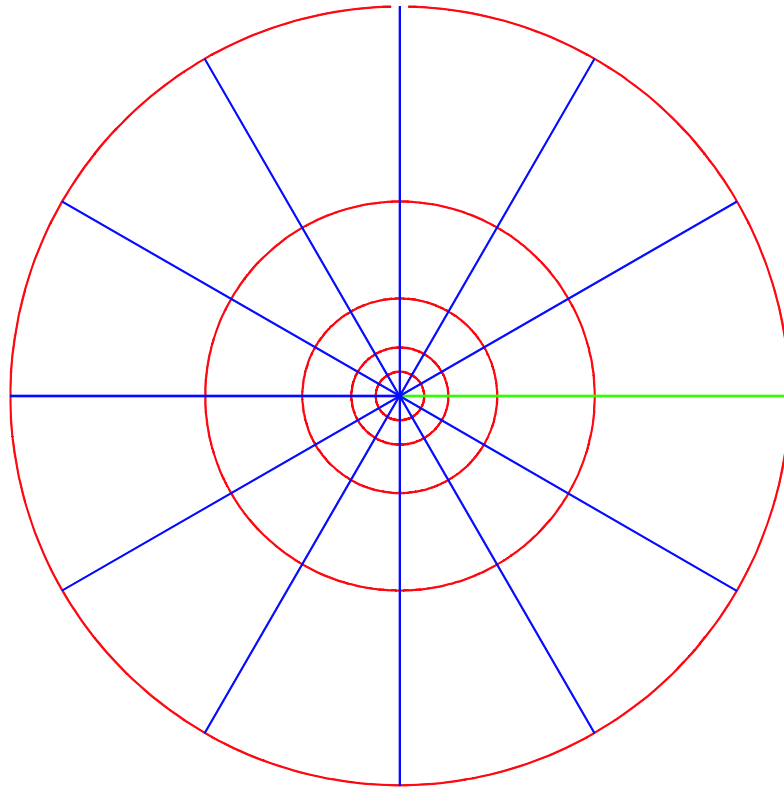
2. Find nearby features for each SURF point

Global Context for SURF



3. Put curvature values in log-polar graph.

Global Context for SURF

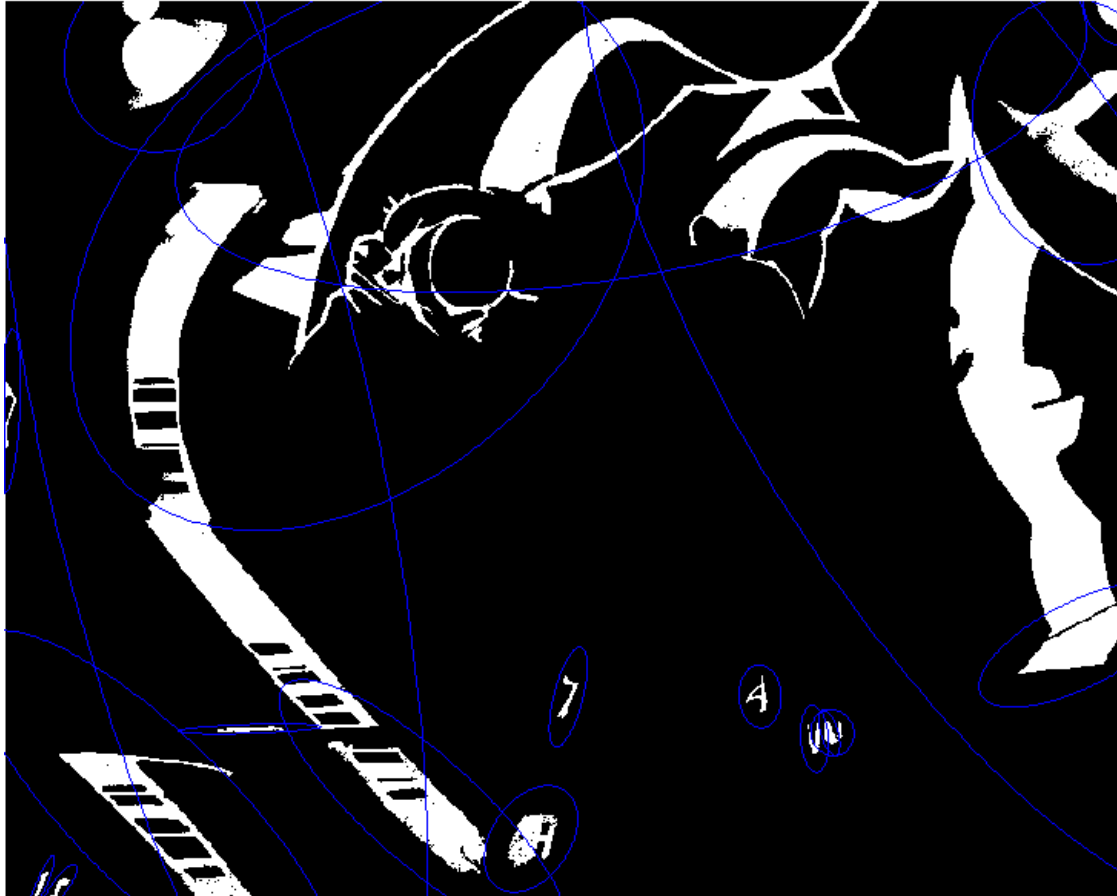


4. Append values of bins to get Global Context.

Global Context for MSER

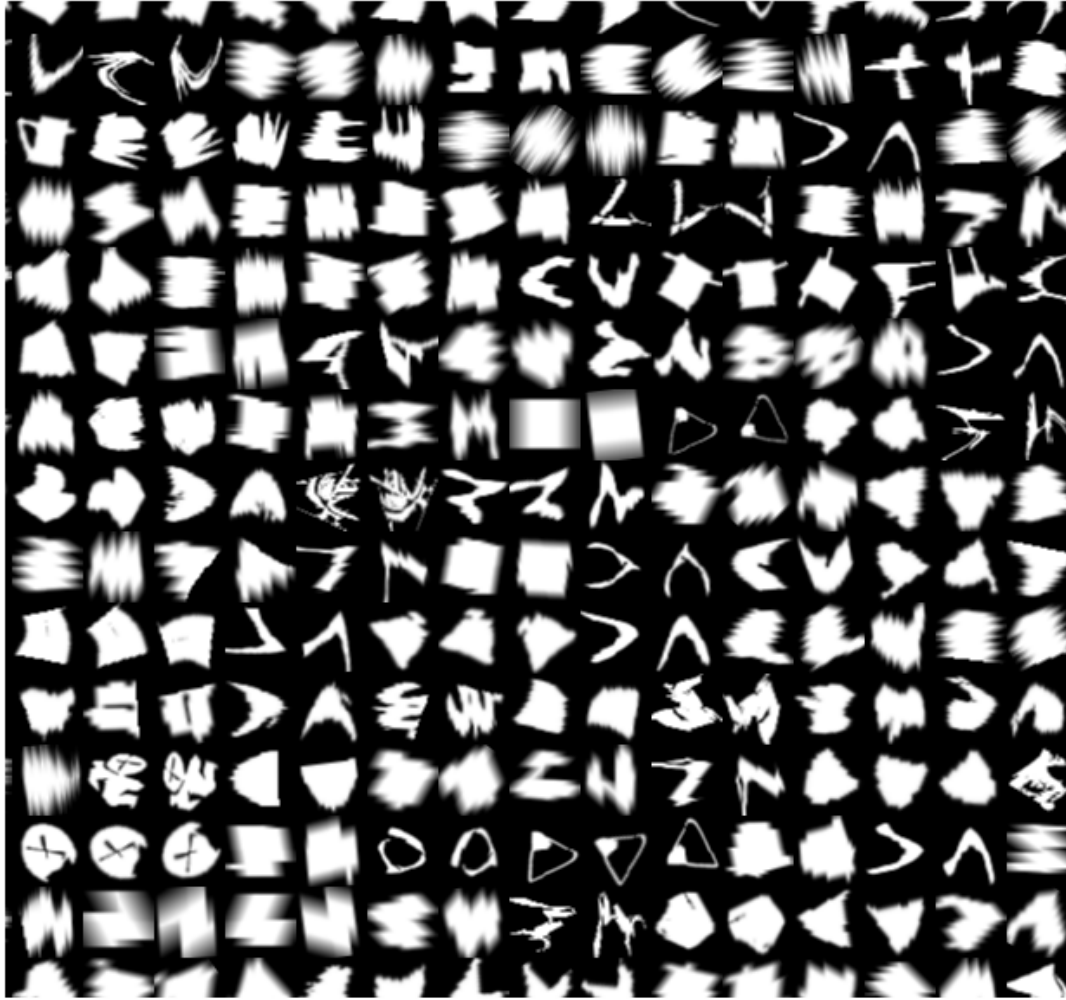
A little different from SIFT/SURF...

Global Context for MSER



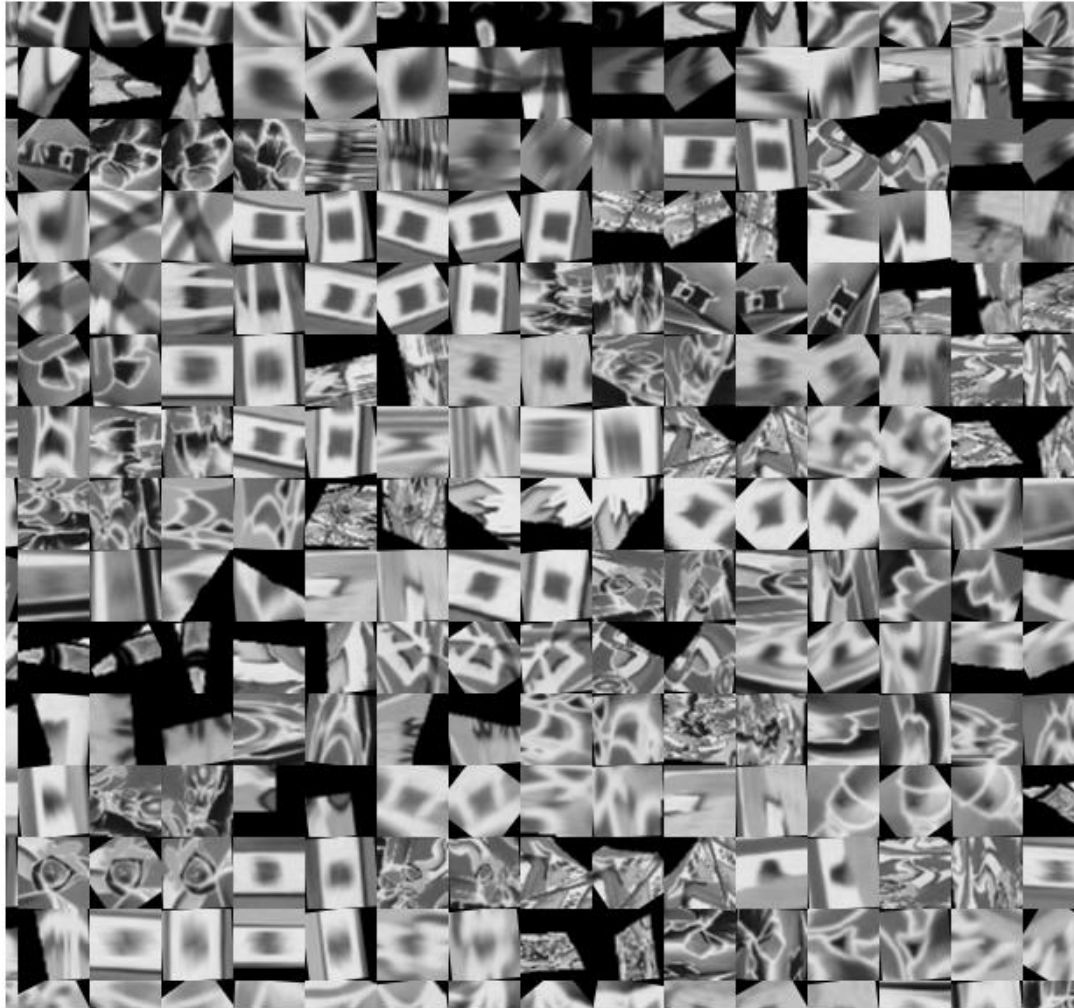
1. Detect Maximally Stable Extremal Regions (MSERs) with VLFeat

Global Context for MSER



2a. Create shape patches (Forssén and Lowe).

Global Context for MSER



2b. Create texture patches (Forssén and Lowe).

Global Context for MSER

Measurement region?

Multiple of bounding ellipse.

Points to measure?

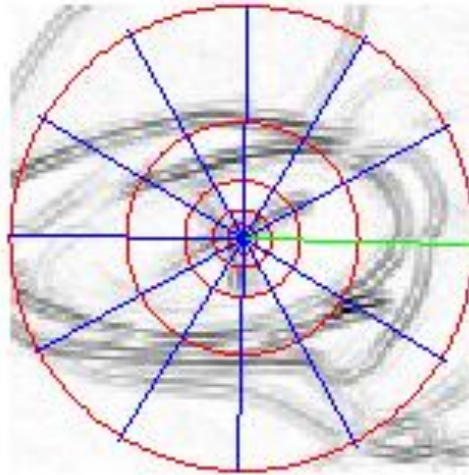
All values around MSER.

Global Context for MSER



3. Create a curvature value patch.

Global Context for MSER

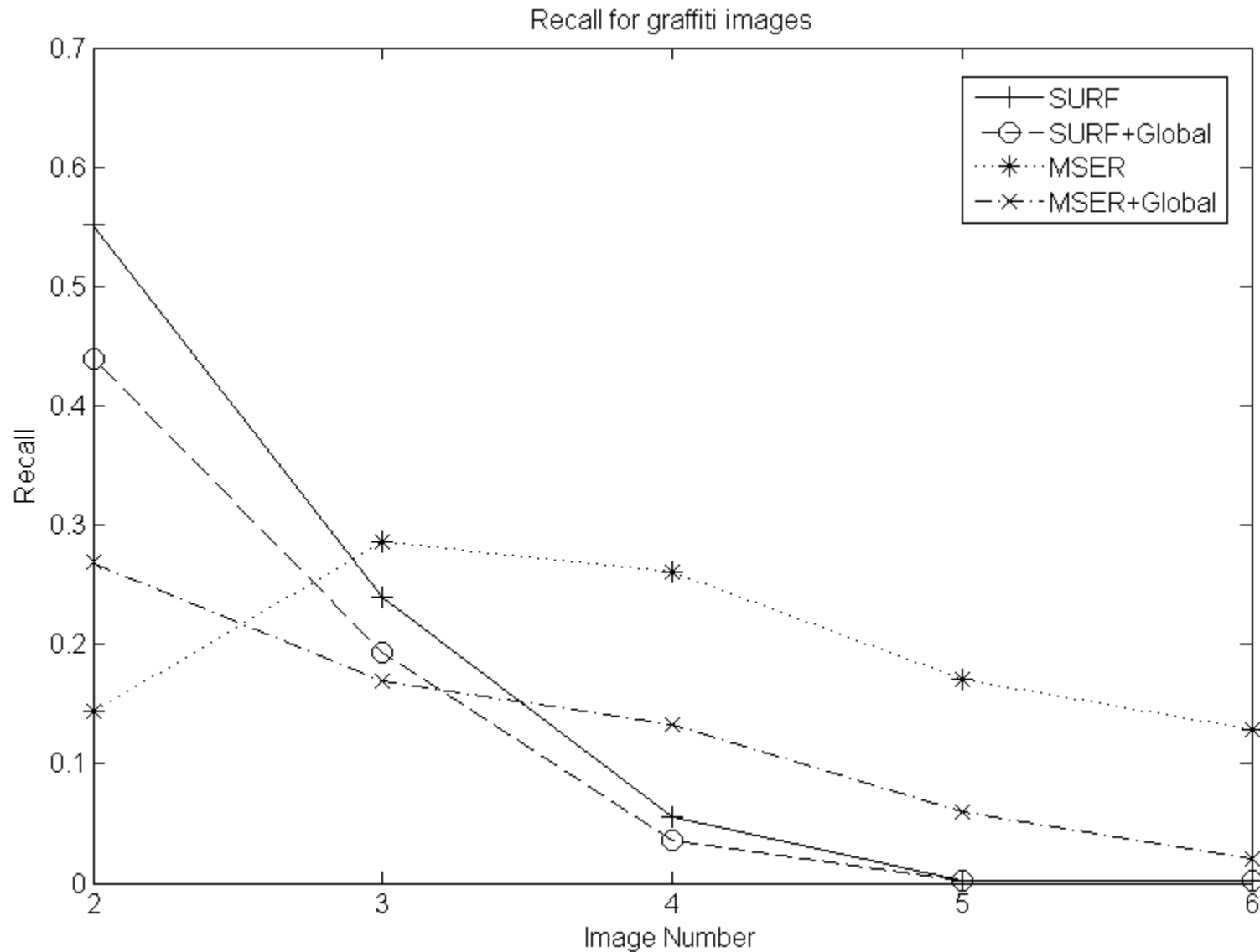


4. Collect curvature values in log-polar graph, append values to become Global Context.

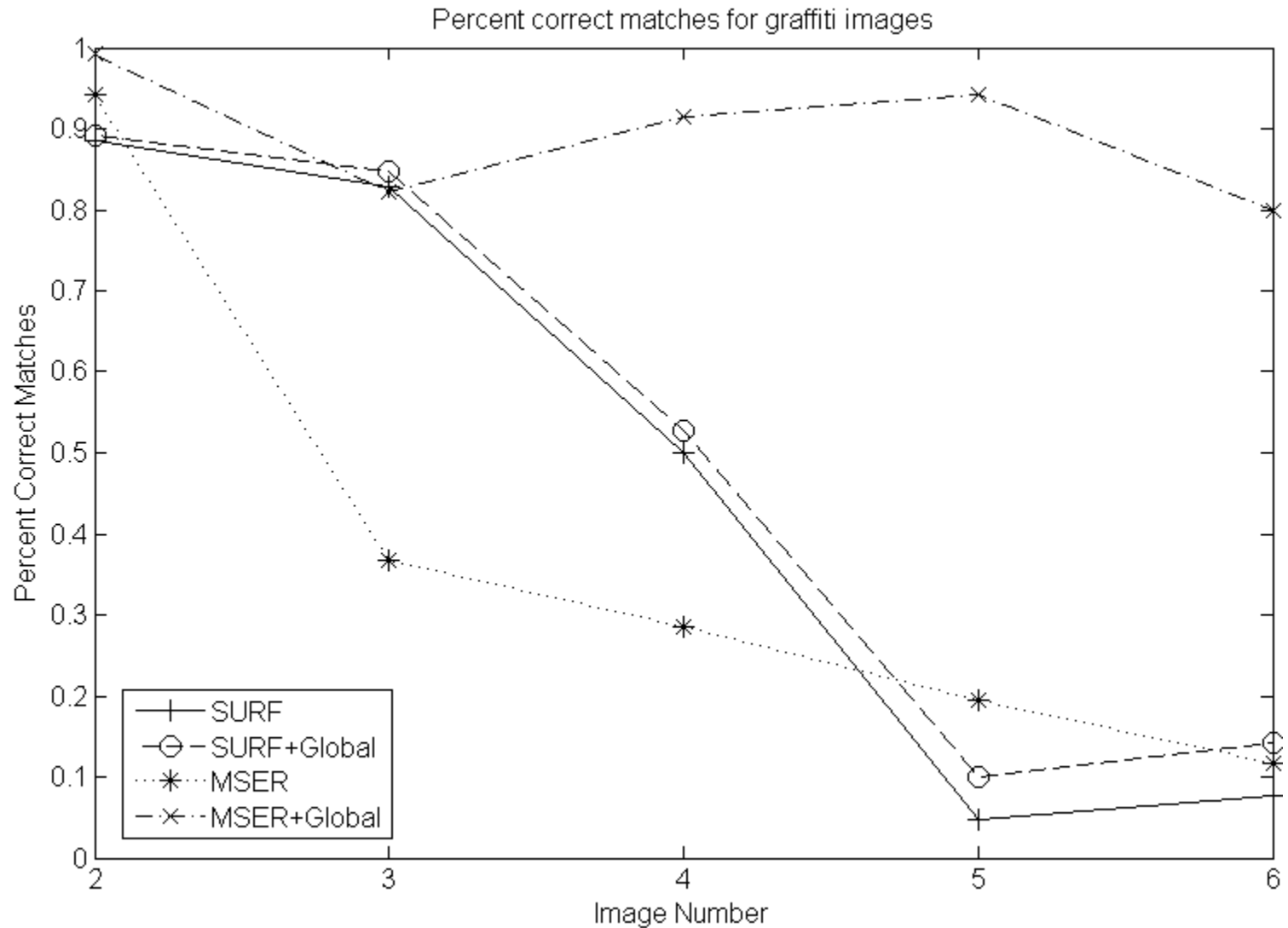
Matching Results



Matching Results



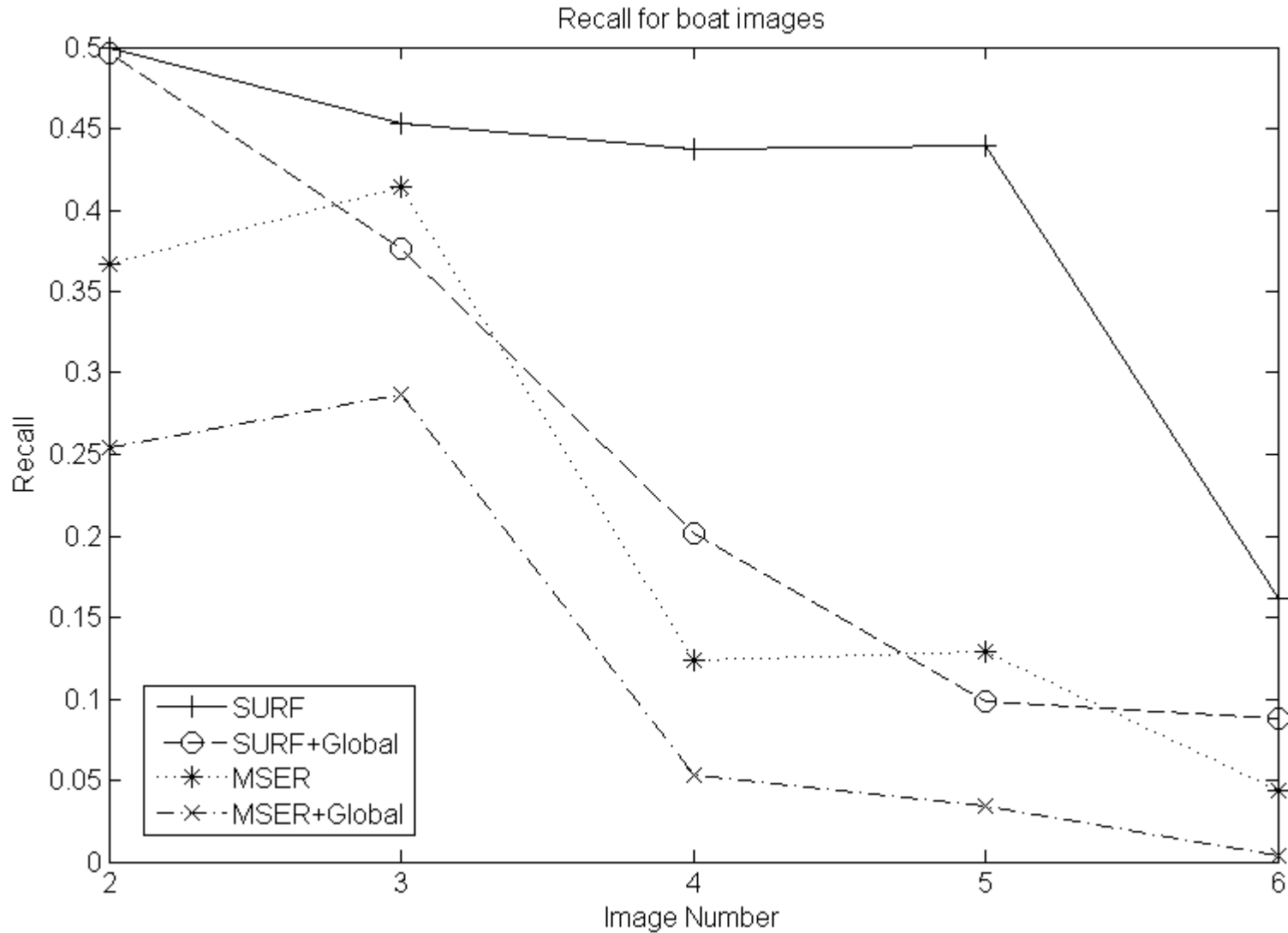
Matching Results



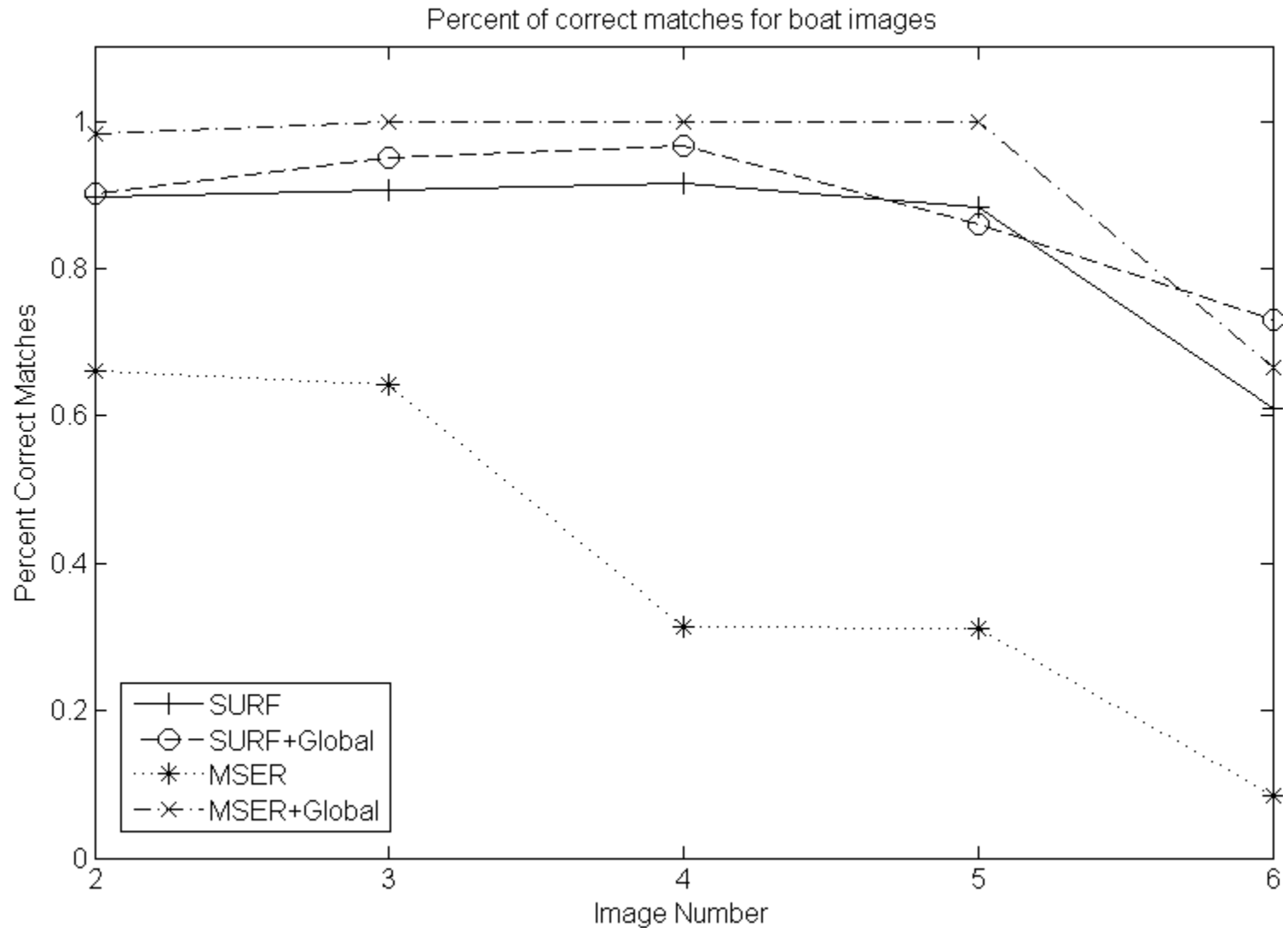
Matching Results



Matching Results



Matching Results



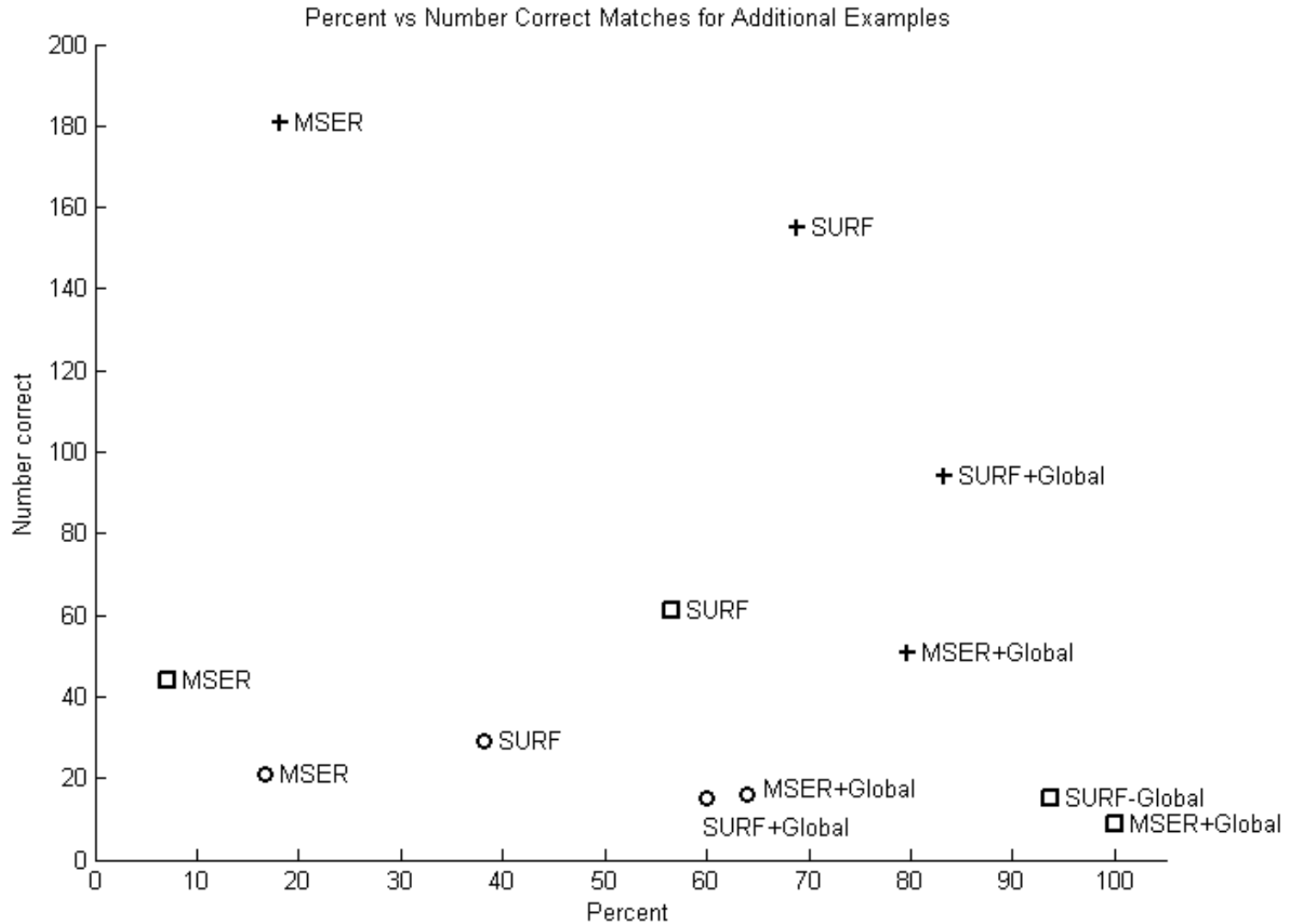
Matching Results



Matching Results



Matching Results



Future Work

- Elliptical neighbouring region for SURF
- Minimum measurement region for MSER
 - More tests, more images

Thanks!