Global Context
Descriptors for SURF and MSER Feature Descriptors

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Stuff I care about...

Learning
Stuff I care about...

Augmented Reality
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
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.
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

Recall for graffiti images

- SURF
- SURF+Global
- MSER
- MSER+Global

Recall

Image Number
Matching Results

Percent correct matches for graffiti images

- **SURF**
- **SURF+Global**
- **MSER**
- **MSER+Global**
Matching Results
Matching Results

Recall for boat images

Recall

Image Number

SURF
SURF+Global
MSER
MSER+Global
Matching Results

Percent of correct matches for boat images

- **SURF**
- **SURF+Global**
- **MSER**
- **MSER+Global**

Percent Correct Matches vs Image Number
Matching Results
Matching Results

Percent vs Number Correct Matches for Additional Examples

- MSER
- SURF
- SURF + Global
- MSER + Global
Future Work

• Elliptical neighbouring region for SURF
• Minimum measurement region for MSER
  • More tests, more images
Thanks!