Lecture 3.2.0
Introduction to keypoint features

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Why extract features?

- Example: Panorama stitching
  - How do we combine two images?

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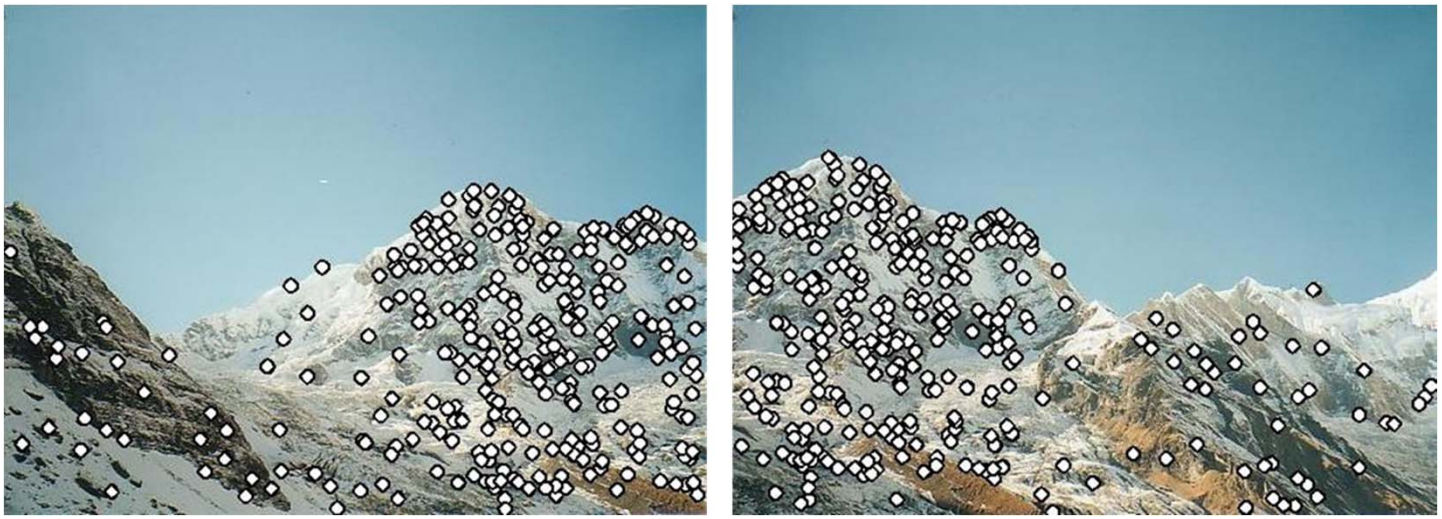
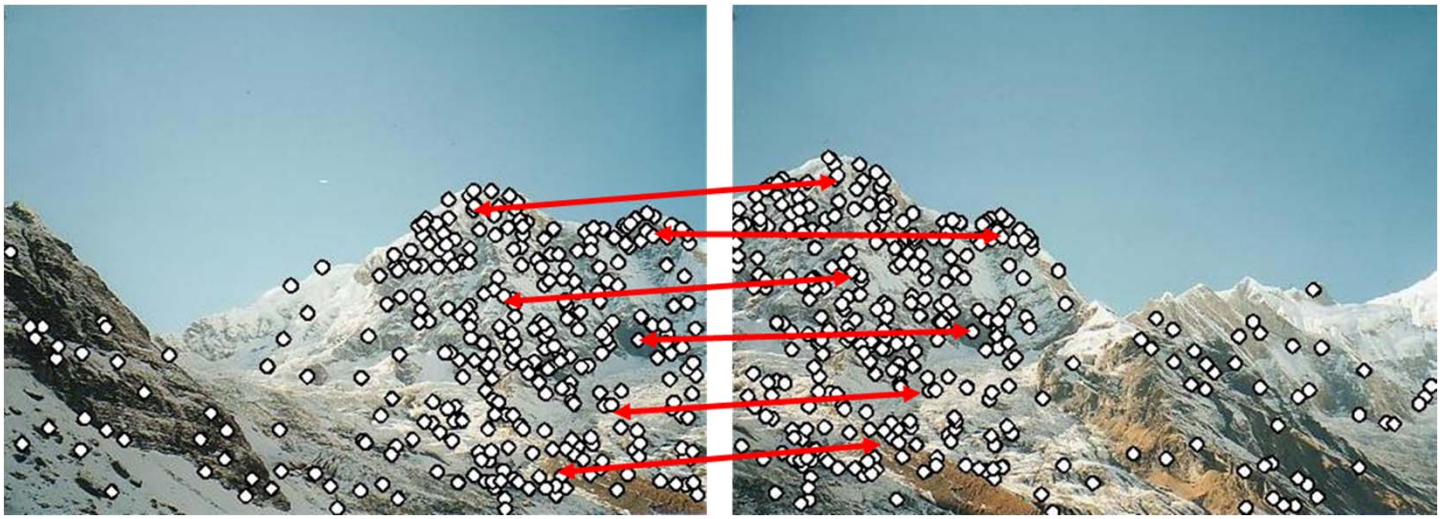
  - How do we combine two images?



Step 1: Extract features

Why extract features?

- Example: Panorama stitching
  - How do we combine two images?

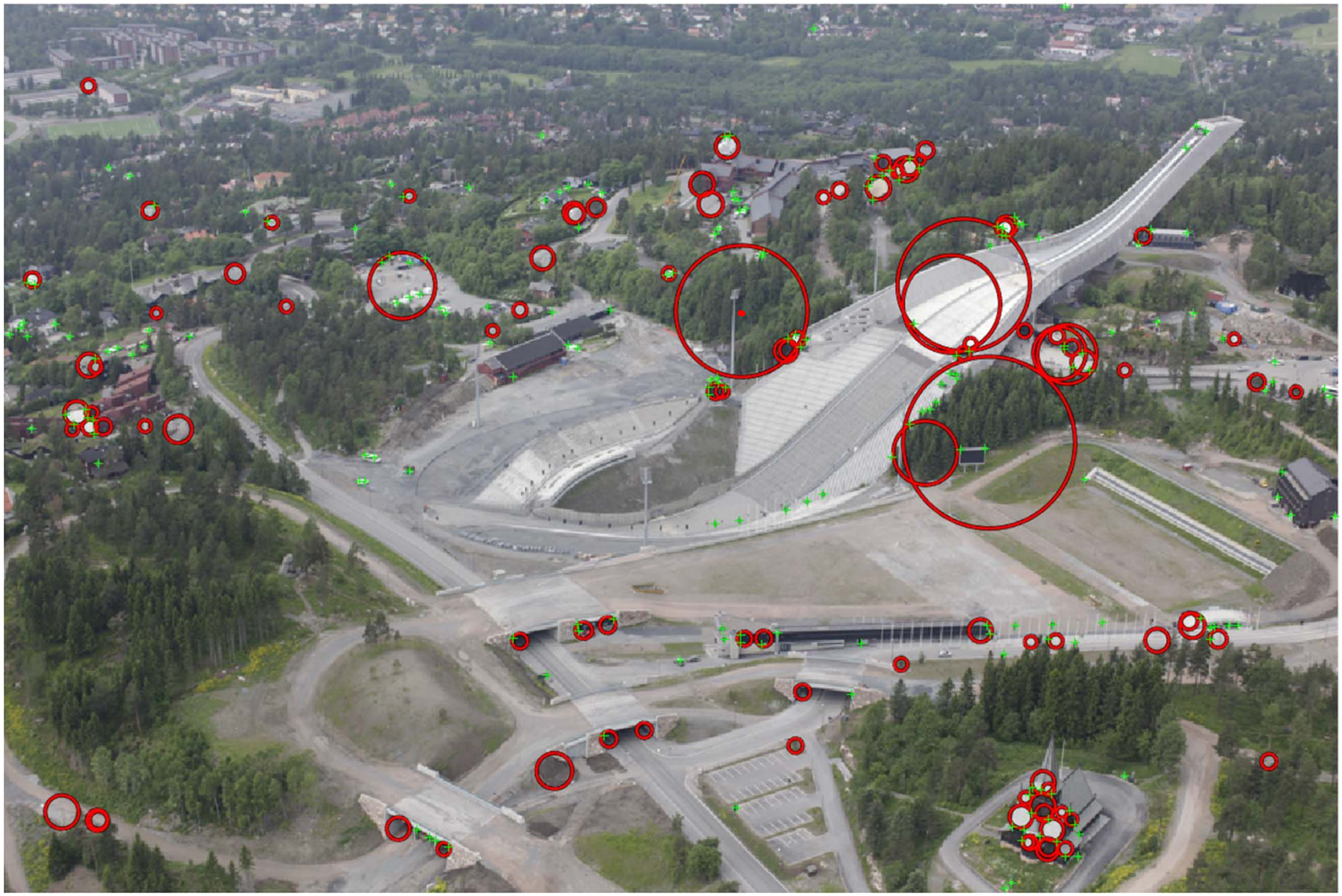


Step 1: Extract features
Step 2: Match features

Why extract features?

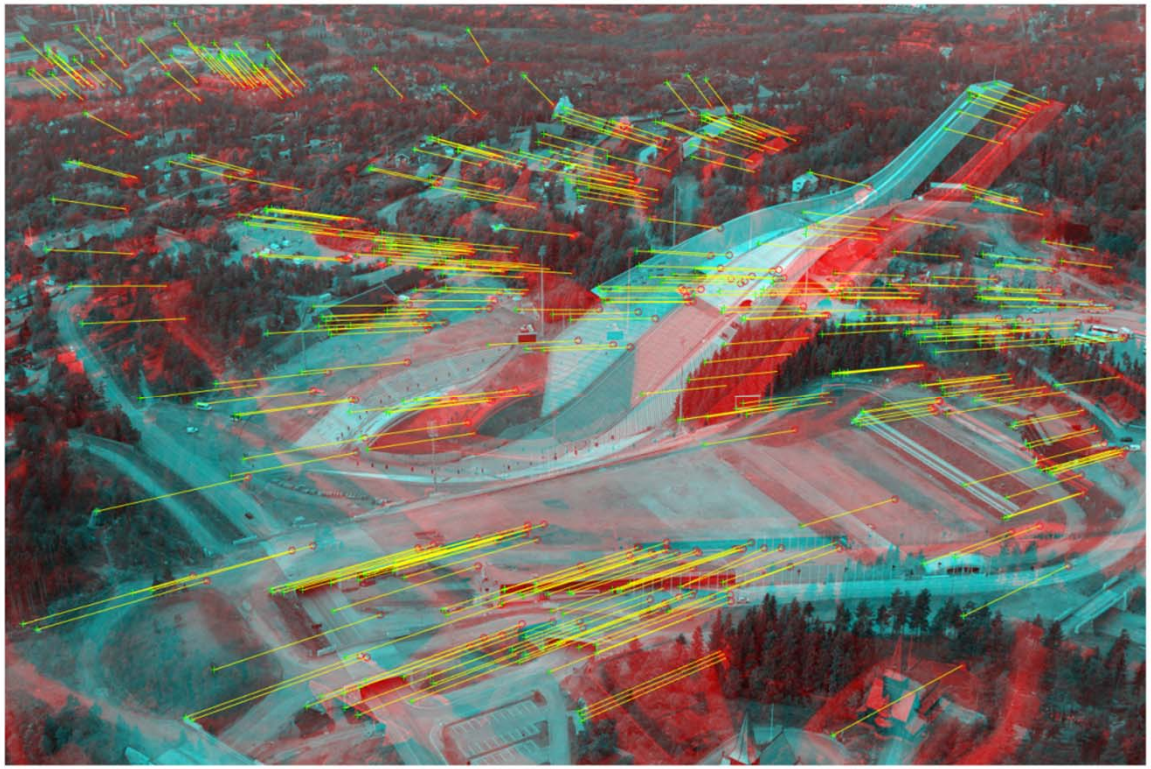
- Example: Panorama stitching
  - How do we combine two images?

Step 1: Extract features
Step 2: Match features
Step 3: Align images



Correspondences across views

Correspondences across views



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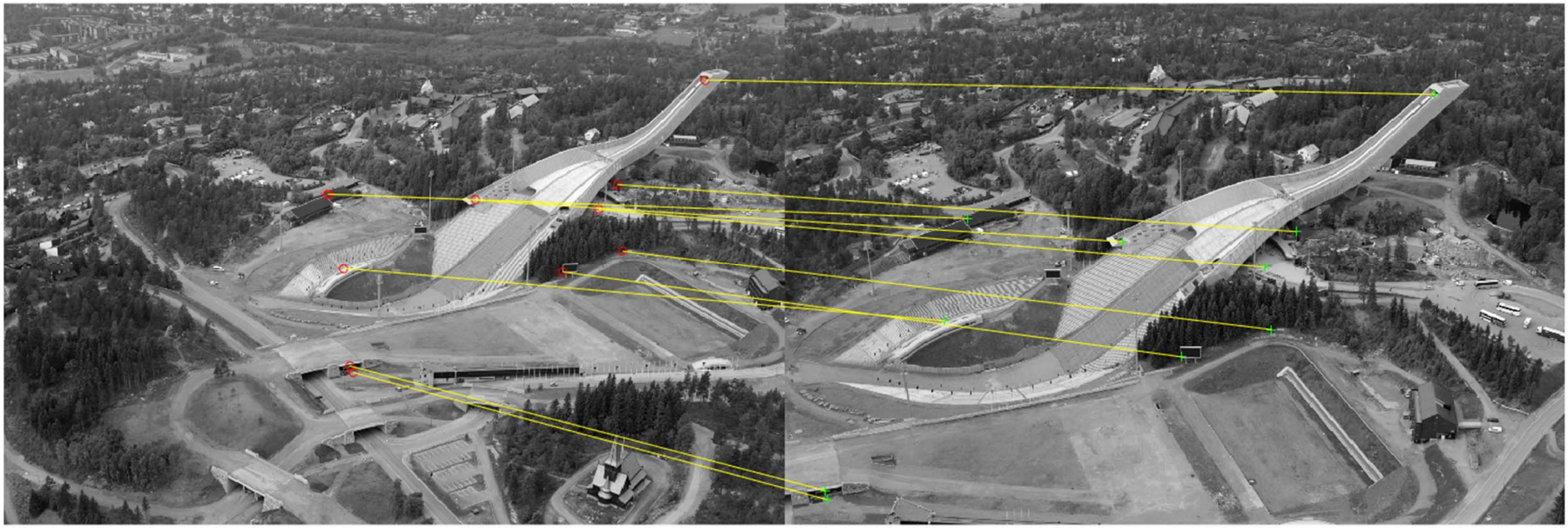

Characteristics of good features

- Repeatability

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- Distinctiveness

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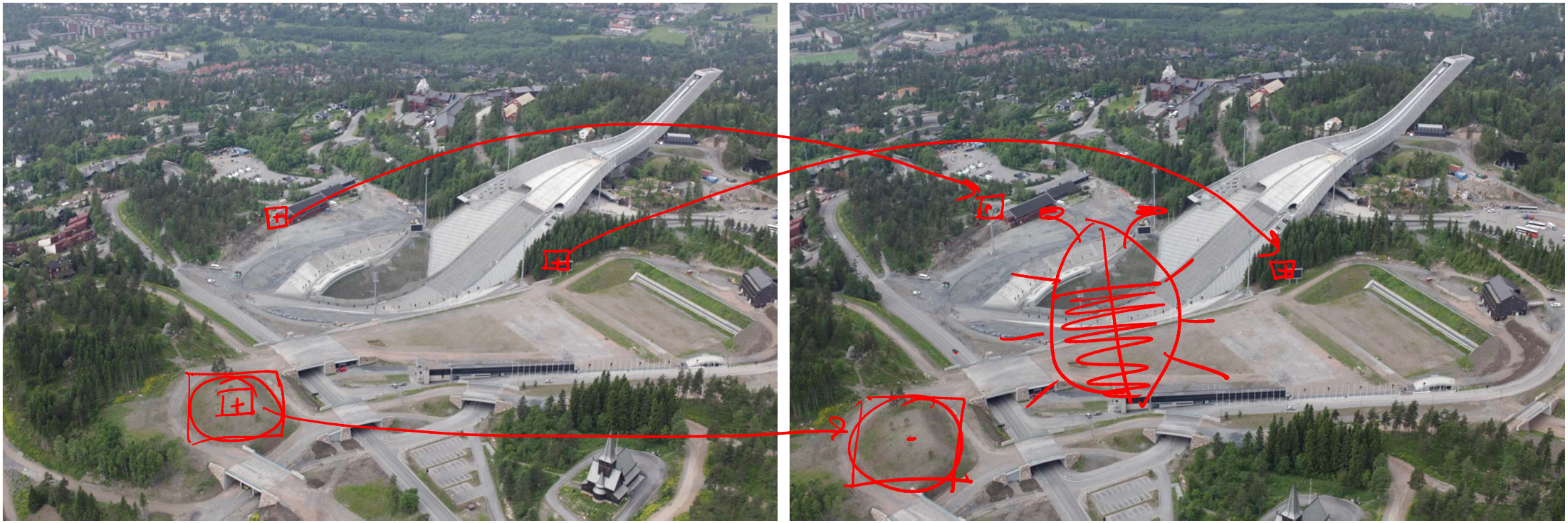
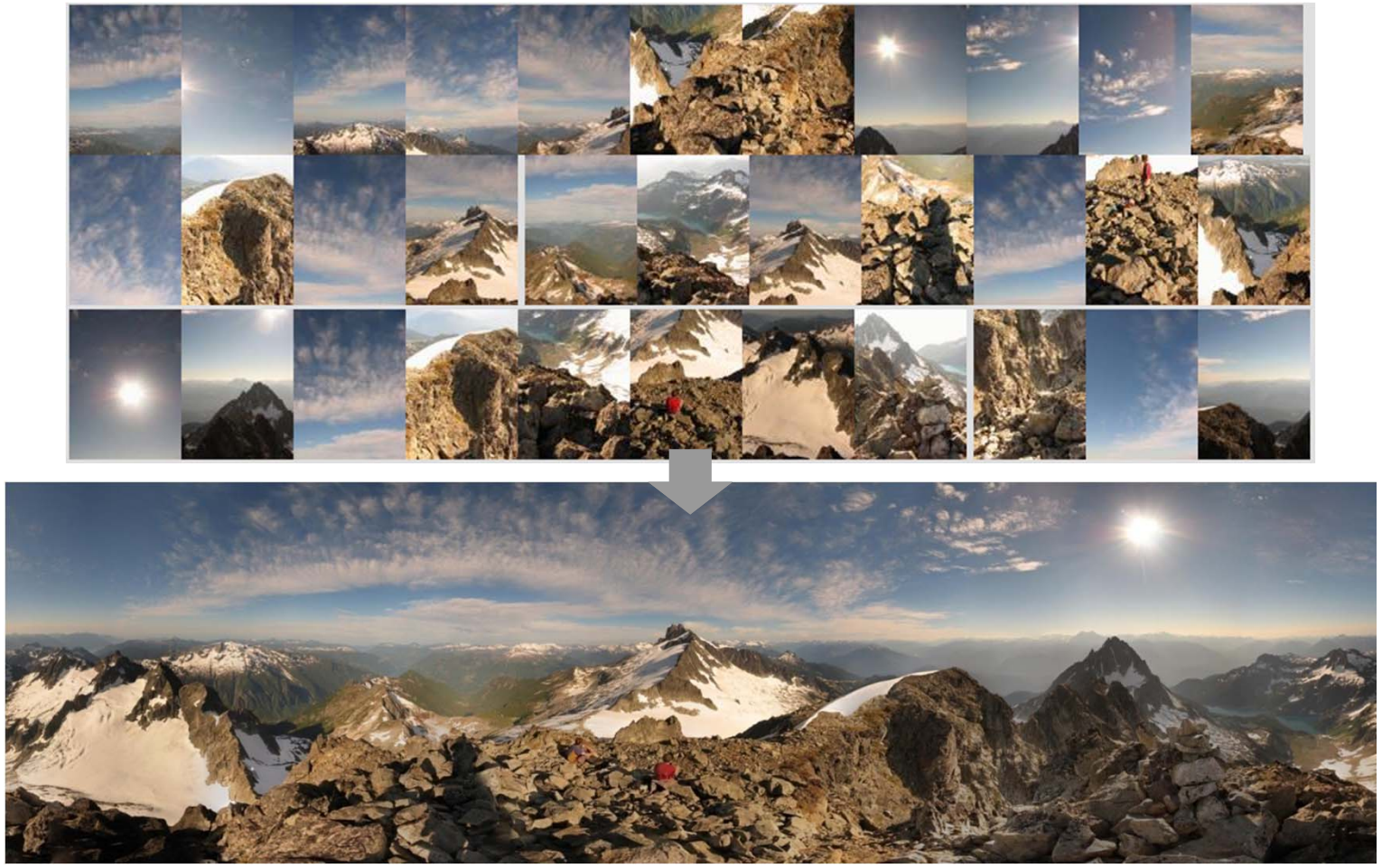
- Efficiency

Characteristics of good features



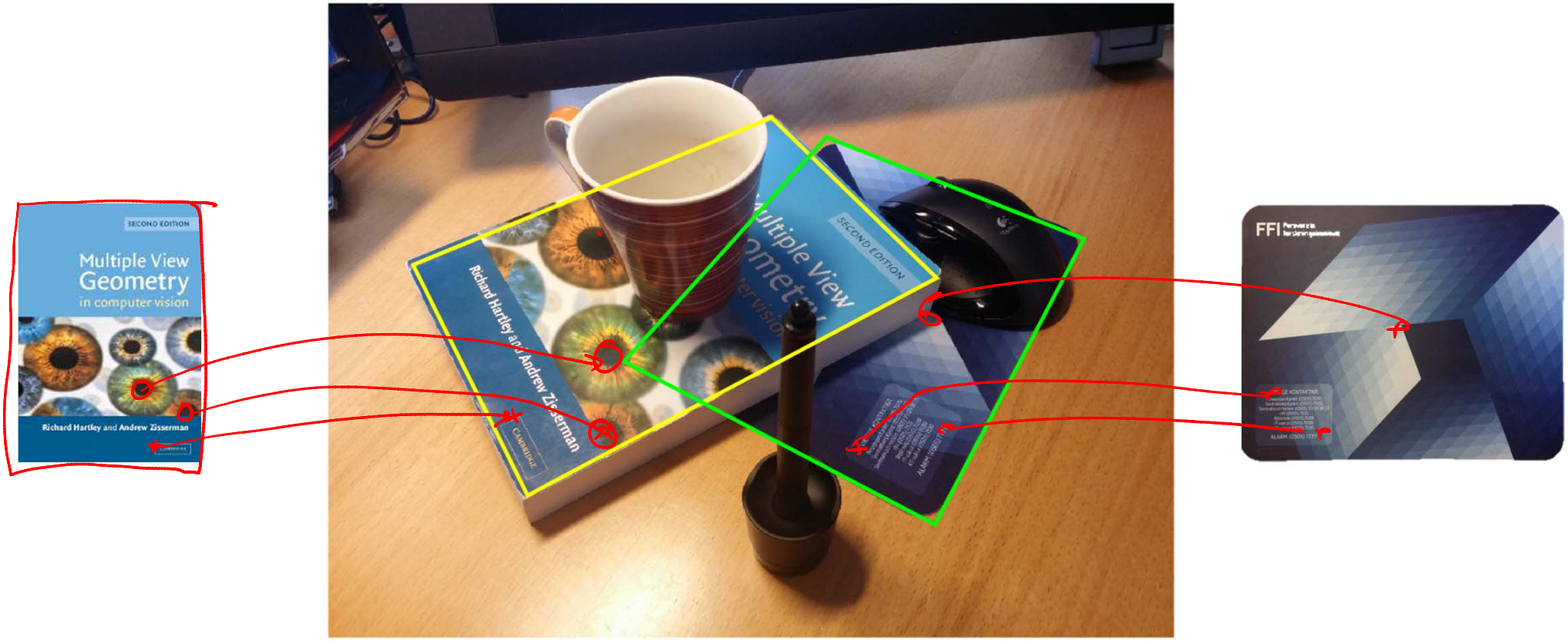
- Repeatability
- Distinctiveness
- Efficiency
- Locality

Applications: Automatic Panoramas

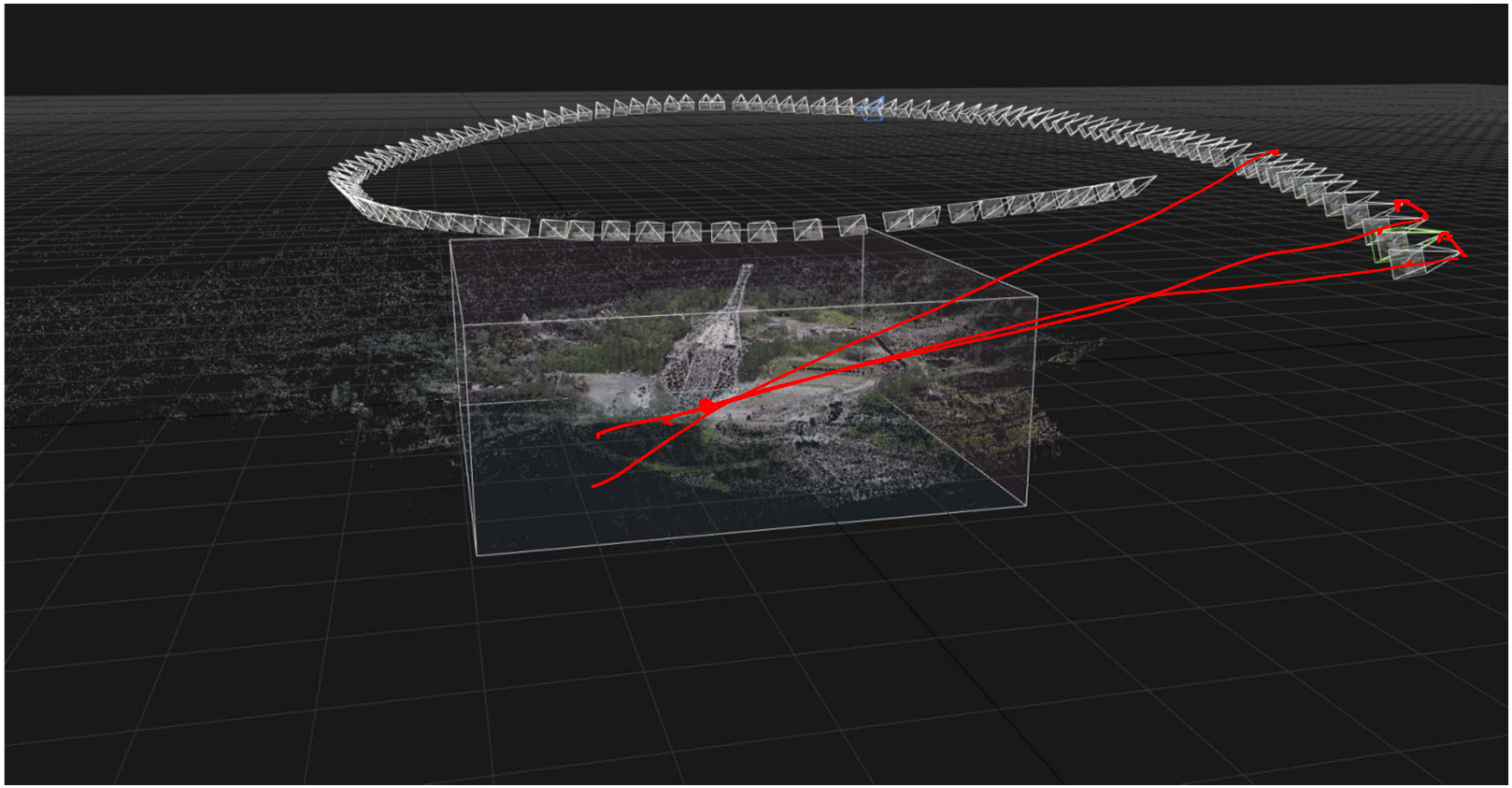


Credit: Matt Brown

Application: Object Recognition



Application: 3D reconstruction and navigation



Use of features in this course

- This week:
  - Lecture 3.2.1: Corner features
  - Lecture 3.2.2: Blob features

- Next week:
  - Feature descriptors
  - Feature matching
  - Homography estimation from correspondences

- Weeks after that:
  - Part II: World geometry and 3D
  - Part III: Scene analysis