Reconstructing the World* in Six Days
*(As Captured by the Yahoo 100 Million Image Dataset)
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Motivation
- We push 3D modeling from city-scale (~1M images) to world-scale datasets (~100M images)
- Data association is the biggest challenge at this scale

Streaming Paradigm
- Tackle robustness, scalability, and completeness of data association
- Read images sequentially from disk
- Read each image only once
- Keep images in memory only as long as necessary

Cluster Representation
- Use cluster images to create adaptive cluster representation

Cluster Discarding
- Some clusters are less important than others
- Discard clusters from memory that do not grow in size fast enough
- Discarding enables scalability to world-scale datasets

Yahoo® Flickr® Dataset
100 Million Images
14TB, 640x480 Resolution

Streaming Connected Component Discovery
- For Each Streamed Image:
  - Create a new single-image cluster in the database

Results
- Effect of Matching to k Neighbors
- Effect of Discard Rate

This material is based upon work supported by the National Science Foundation under Grant No. IIS-1252921, No. IIS-1349074, and No. CNS-1405847 as well as by the US Army Research, Development and Engineering Command Grant No. W911NF-14-1-0438.