

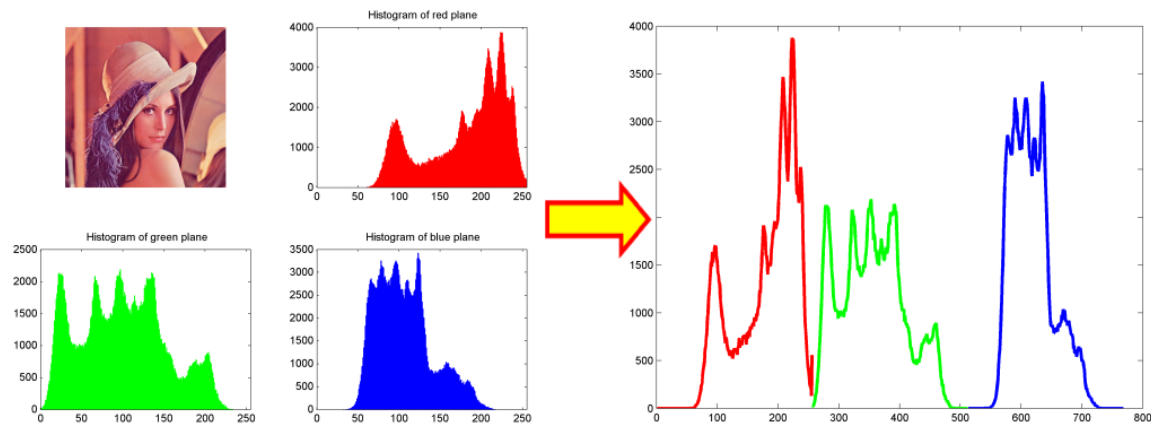
# DESIGN AND IMPLEMENTATION OF IMAGE INFORMATION RETRIEVAL

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# Images

- How to represent a image?
  - Color histograms.
  - Shape.
  - Texture.
  - Smoothness.
  - Metadata
  - ...



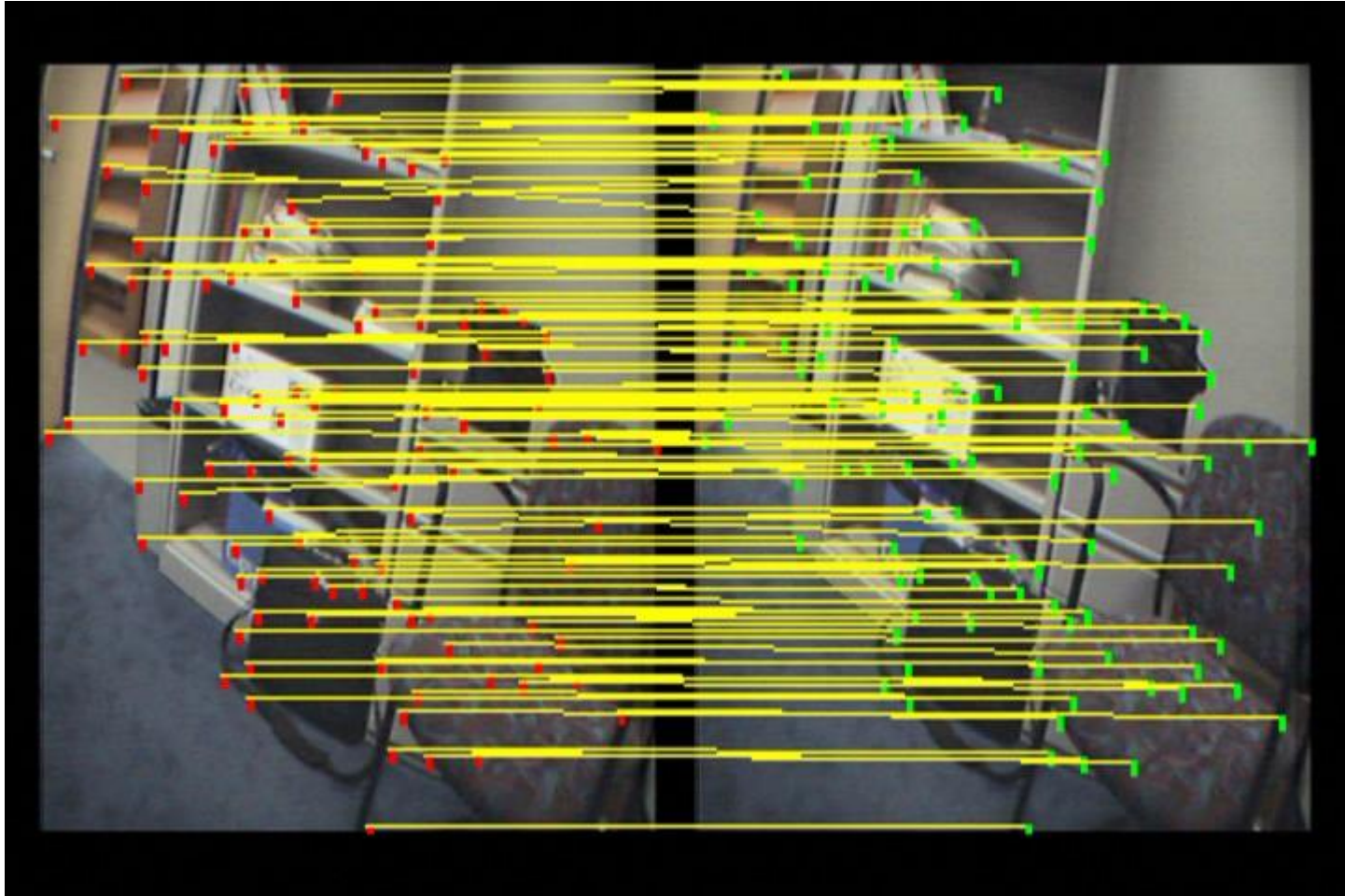
# Image features

- We can extract features from the image and create a vector of features.

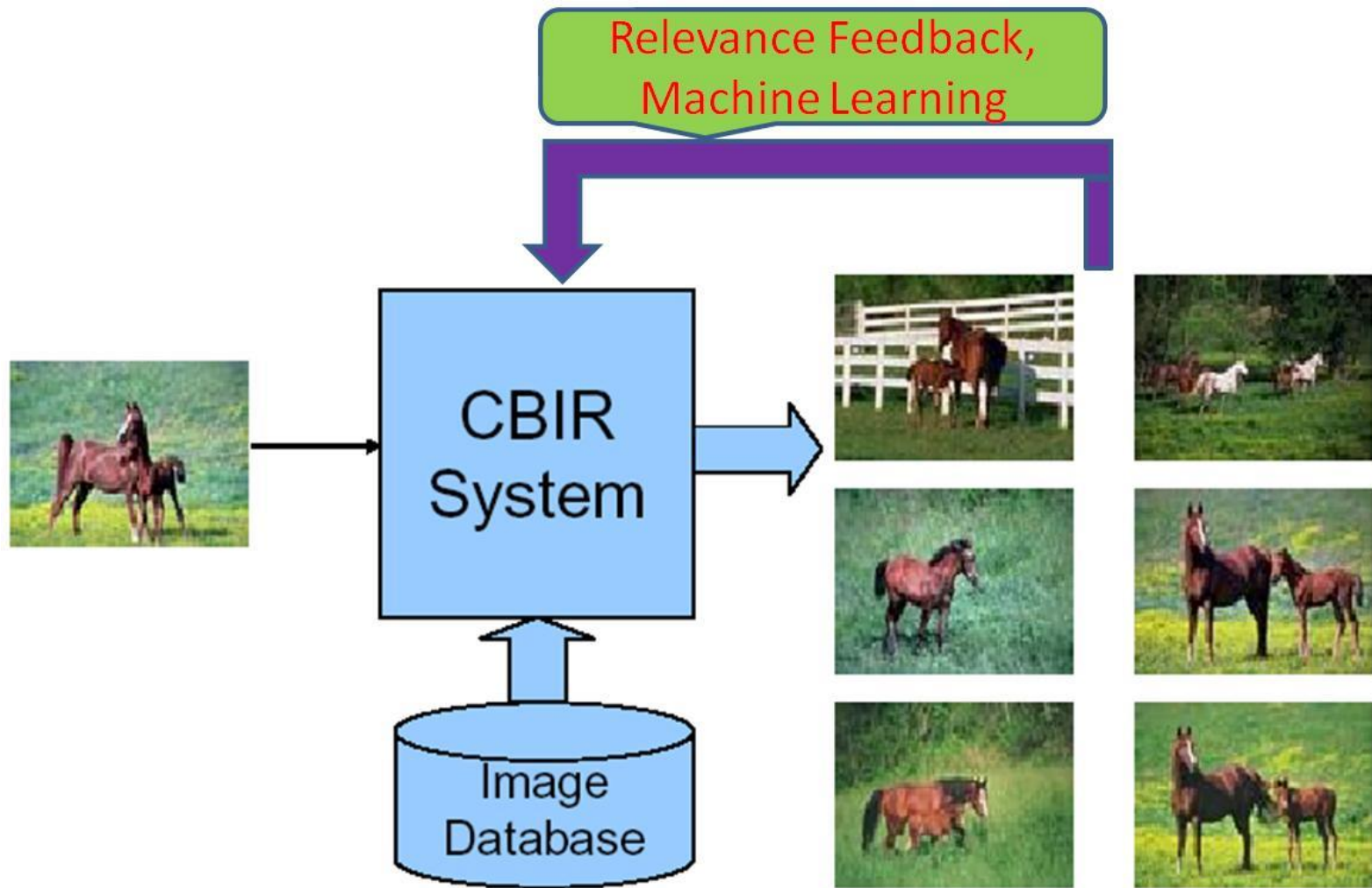


- Due to the high number of features, these vectors are called high-dimensional spaces.

# Matching features



# Content Based Information Retrieval

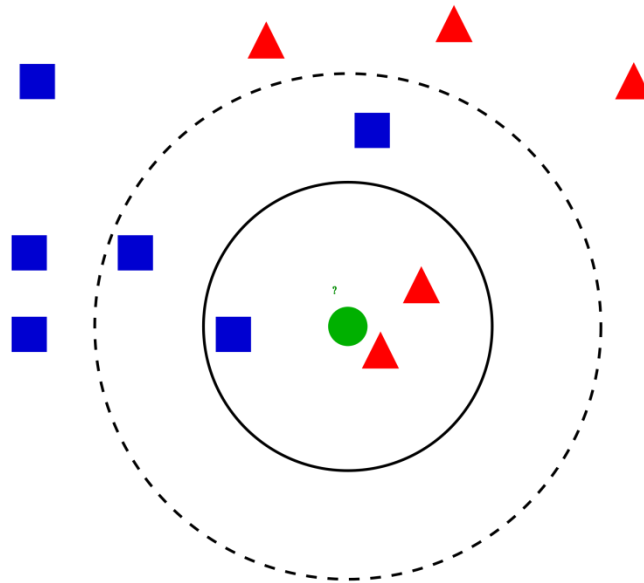






# Image similarity

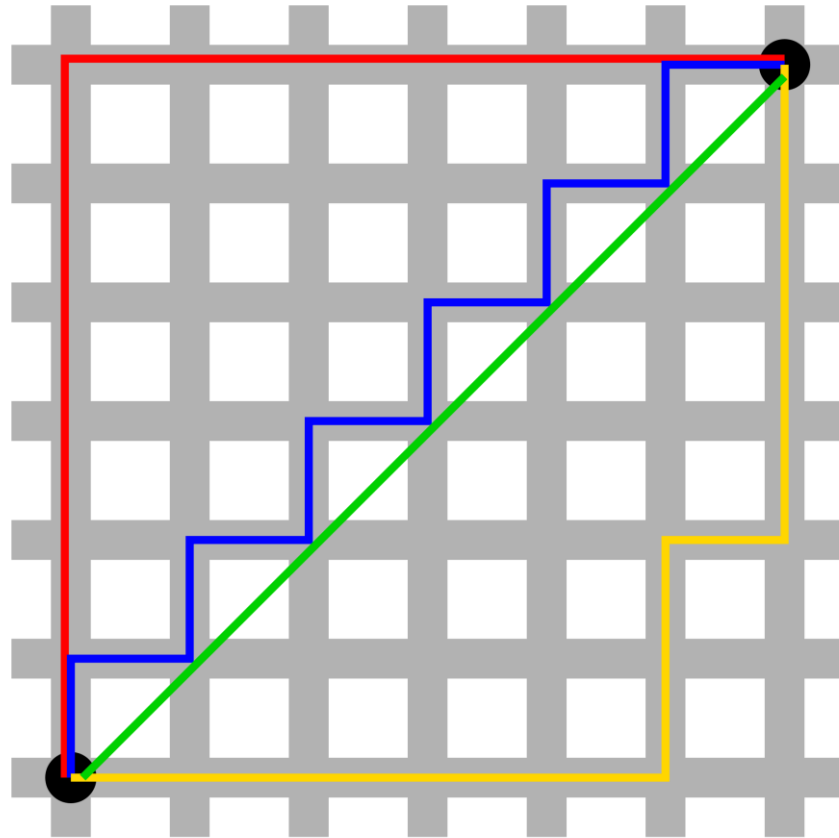
- With the feature vectors we can search for similar vectors stored in our database.
  - The use K-Nearest Neighbor algorithm makes this possible.



# Image similarity

- Distances:
  - Manhattan
  - Euclidean
  - Minkowski
  - Maximum

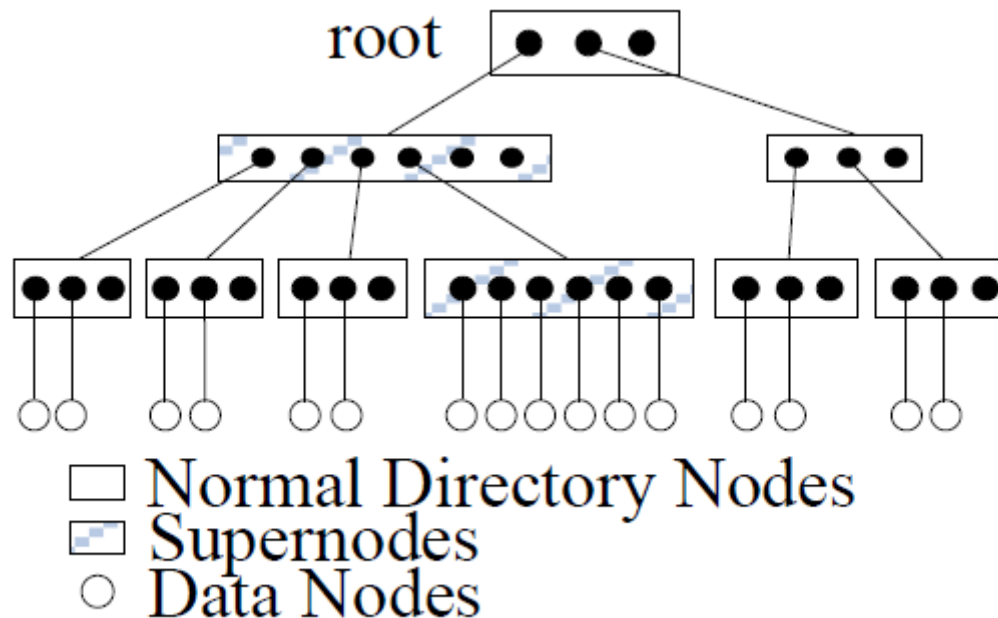
For this application Manhattan distance performs best through empirical evaluations in their previous research.



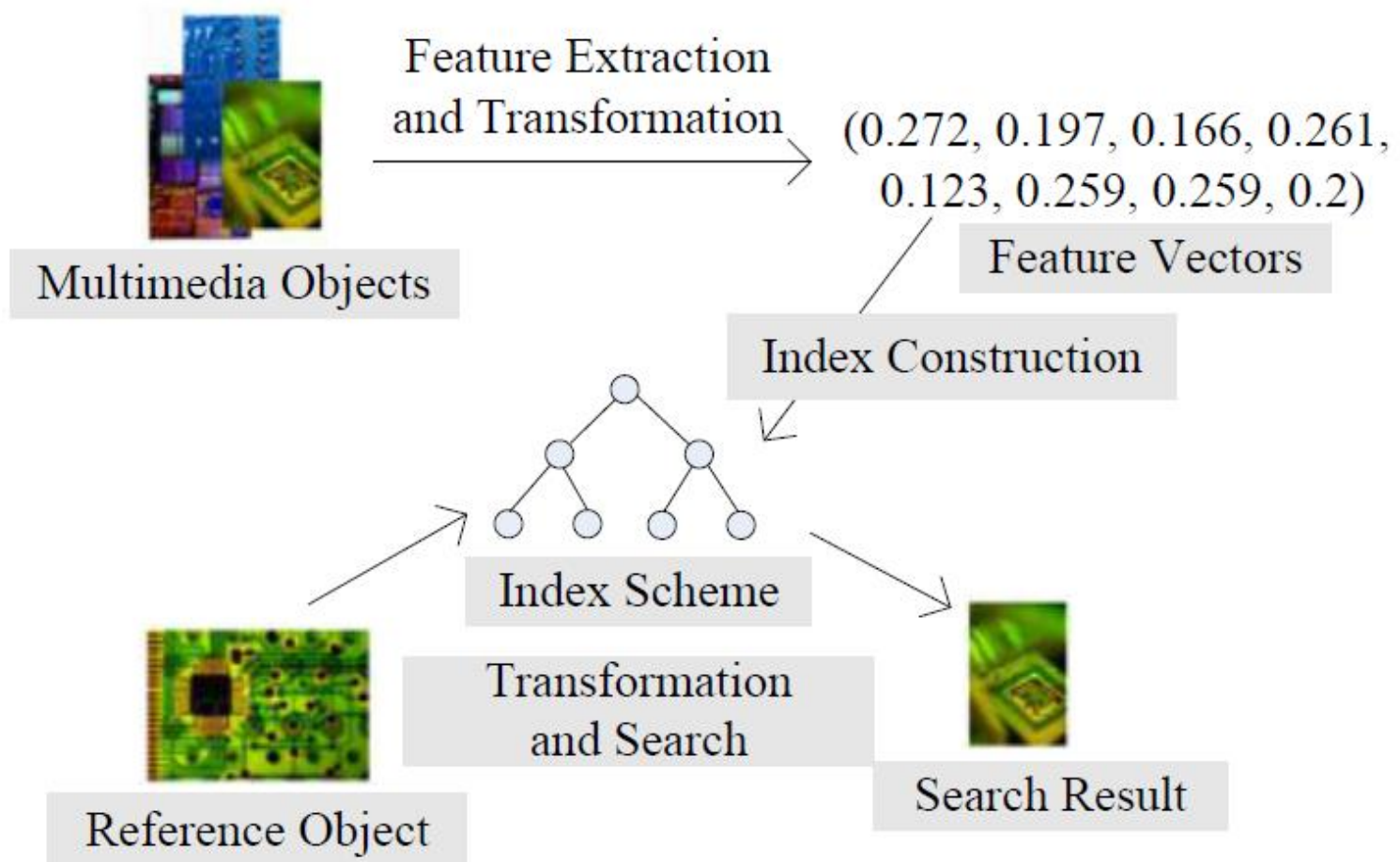


# Indexing all the data

- X-tree structure
  - It is a tree to have the vectors of features stored with a good indexing.
  - The similar vectors are stored in a group, and when the vectors are very different they are stored in another group.



# Overview

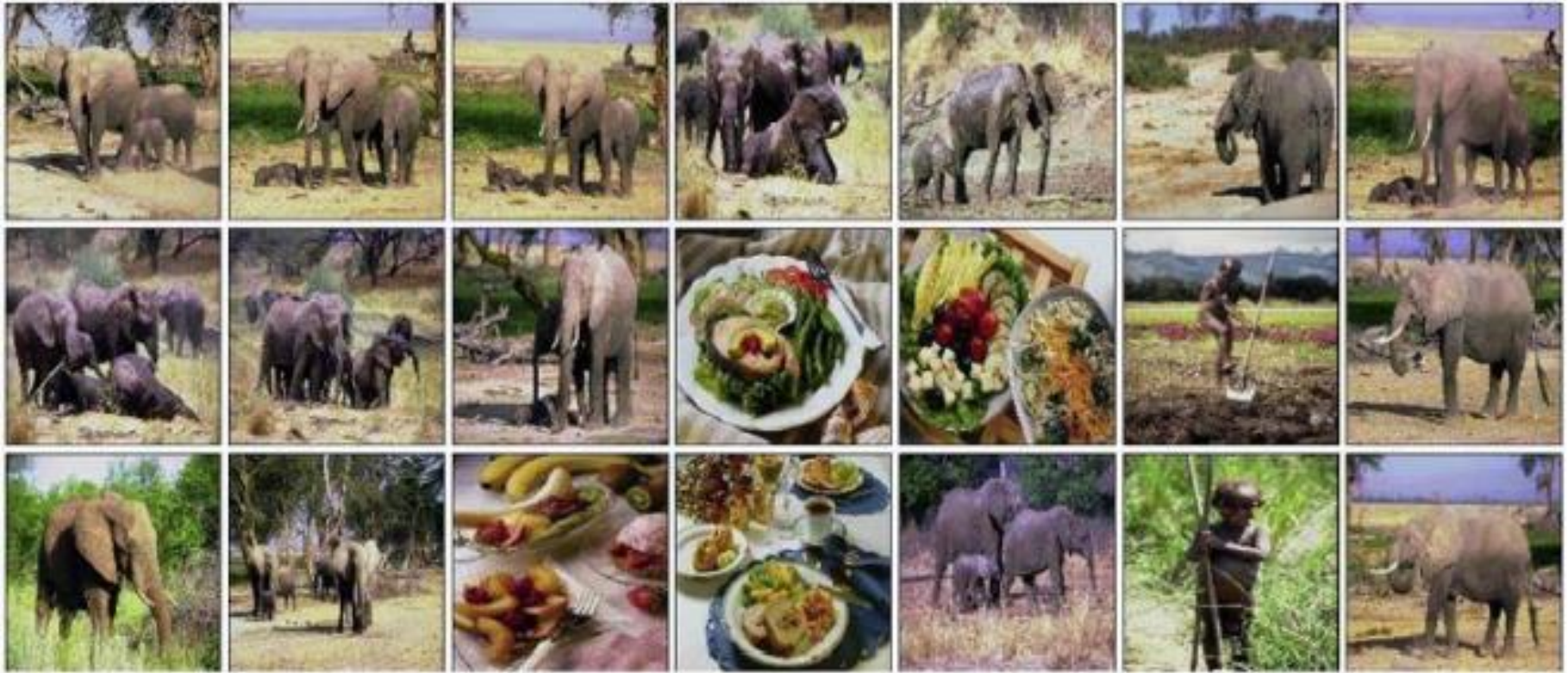


# Results








# Results









# Applications

Color 



Results  

 Search!

 53.92%	 53.51%
 53.31%	 53.25%
	

# Applications

