Segmentation of Images By Color
Using K-means Clustering Algorithm

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Segmentation

Segmentation is ill-defined

In specific cases segmentation can be easy and useful
Example of a Restricted World

Segmentation by colors is very effective

A good segmentation is a crucial step in a Fruit Ninja Solver
Goals and Ideas

- Using k-means clustering algorithm to get a segmentation by color of an image from fruit ninja

- Trying to get a good segmentation

- Minimizing human interaction
K-Means Clustering of Pixel Colors

Mapping pixels to the RGB color space

The “actual” k should be known in advance
Segmentation Example

The result could be better... 😞
Estimating The K Parameter

Too big k parameter decreases the minimal distance between centers
Running The Algorithm

The estimation of k is pretty close!

But the problem from the previous slide persists
Importance of Representations
Color Representation

What would be a good representation for our needs?
Running the Algorithm in HSV

Original          Optimal          Result
Running the Algorithm in RGB

Original  Optimal  Result
Running the Algorithm in HSV

Original  Optimal  Result
Running the Algorithm in RGB

Original  Optimal  Result
Running the Algorithm in RGB

Original    Optimal    Result
Why Use RGB?

Is HSV the ultimate answer?
Why Use RGB?