Introduction

• What IS computer vision?

  the analysis of digital images by a computer

• Where do images come from?
Applications: Medical Imaging

CT image of a patient’s abdomen
Visible Man Slice Through Lung
3D Reconstruction of the Blood Vessel Tree
Slice of a Chicken Embryo’s Inner Ear
CBIR of Mouse Eye Images for Genetic Studies
Robotics

• 2D Gray-tone or Color Images

“Mars” rover

• 3D Range Images

What am I?
• Robot Soccer
Image Databases:

Images from my Ground-Truth collection:
http://www.cs.washington.edu/research/imagedatabase/groundtruth

- retrieve images containing trees
Some Features for Image Retrieval
### Classification Results:

<table>
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<tr>
<th>Classified</th>
<th>as Cal</th>
<th>as Yor</th>
</tr>
</thead>
<tbody>
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<td>16</td>
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<tr>
<td>Yor</td>
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<table>
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<th>as Dor</th>
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<tbody>
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<td>72</td>
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<tr>
<td>Dor</td>
<td>70</td>
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</table>
Surveillance: Event Recognition in Aerial Videos

Original Video Frame

Color Regions

Structure Regions
Face Detection (and Recognition)
Graphics: Special Effects

Andy Serkis, Gollum, Lord of the Rings
3D Reconstruction and Graphics Viewer
Object Recognition from “Parts”