

## Machine Vision

### Line labelling

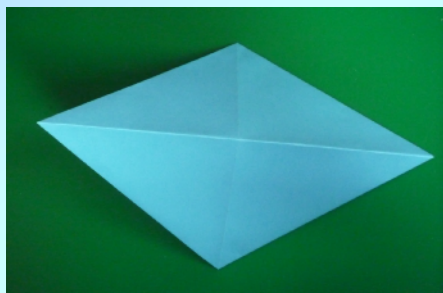
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## General-purpose Vision System

- Image taken from a 3-D World
- Edge detection
- Constraint generation
  - Line drawing, shading, texture, stereo, motion
- Simultaneous constraint satisfaction, 3-D segmentation and aggregation
- Recognition, prediction, navigation, etc.

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## Scenes to be interpreted



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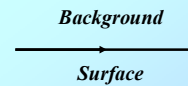
## Polygonal Planar Surfaces

- Types of line labels:

– Convex –

– Concave +

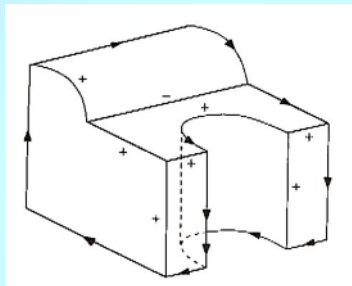
– Occlusion →



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## Line Labelling

- Consistently labelled lines



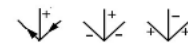
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## Legal labels for Polyhedra

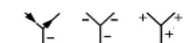
V-junctions



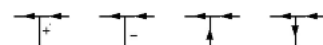
W-junctions



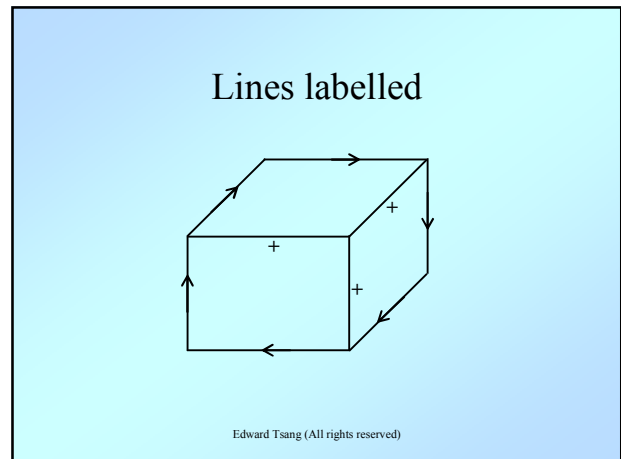
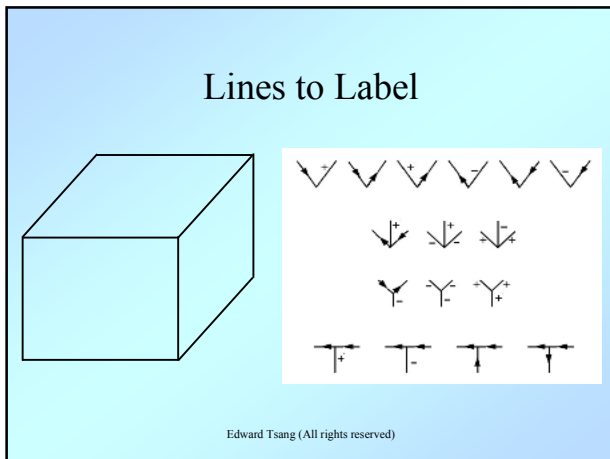
Y-junctions



T-junctions



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### Labelling algorithm

- Huffman and Clowes
  - independently discovered this algorithm
- Improve search efficiency
  - through constraint propagation
- Leading to constraint satisfaction research
  - now an established field involving £Millions

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