
Normalized Cuts and Image Segmentation

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Perceptual Grouping and Organization (Wertheimer)

- Similarity
- Proximity
- Common fate
- Good continuation
- Past experience

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Visual grouping

History

A B C

1 2 3 4

How to Partition?

- There is no single answer
- Prior World Knowledge:
 - Low Level
 - Coherence of Brightness
 - Color
 - Texture
 - Motion
 - Mid or High Level
 - Symmetries of Objects

How to Partition? (Cont'd)

- inherently hierarchical
- TREE STRUCTURE instead of flat partitioning
- OBJECTIVE:
 - low level cues for hierarchical partitions.
 - High level knowledge for further partitioning.

Tools

- $G=(V,E)$
- An edge is formed between every pair (Complete graph)
- $w(i,j)$ function of similarity.
- Partition V into *disjoint* sets V_1, V_2, \dots, V_m
 - Similarity within sets maximum.
 - Similarity between sets minimum.