Mapping

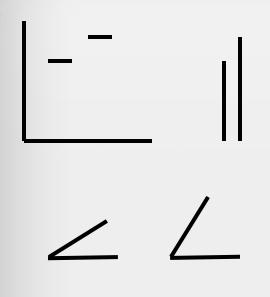
John C. Hart

Department of Computer Science University of Illinois at Urbana-Champaign

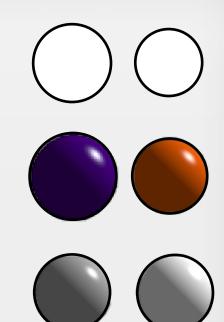
less effective and less accurate in terms of geometric representation

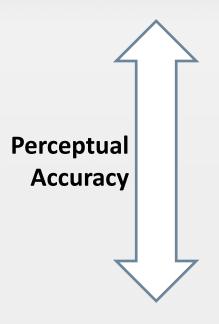
- Position
- Length
- Angle/Slope
- Area
- Volume
- Color/Density

CLEVELAND, W. S., AND MCGILL, R. Graphical perception: Theory, experimentation and application to the development of graphical methods. Journal of the American Statistical Association, 79(387) 1984



- Position
- Length
- Angle/Slope
- Area
- Volume
- Color/Density





- Position
- Length
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Position

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Angle

Slope

Area

Volume

Density

Saturation

Hue

Ordinal

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| | Saturation | Length |
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| I. Mackinlay, Automating the Design of Graphical Presentations of Relational Information, ACM Transactions on Graphics 5(2), 1986 | | |

Position

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| Quantitative | Ordinal |
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| Length | Density |
| Angle | Saturation |
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Nominal

Position

J. Mackinlay, Automating the Design of Graphical Presentations of Relational Information, ACM Transactions on Graphics 5(2), 1986

Quantitative **Ordinal** Position Position Density Length Angle Saturation Slope Hue Area **Texture** Connection Volume Containment Density Length Saturation Angle Hue Slope Area

Volume

Nominal Position Hue **Texture** Connection Containment Density Saturation

Position Position Density Length Angle Saturation Slope Hue Area **Texture** Connection Volume Containment Density Length Saturation Angle Hue Slope Area Volume

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Containment Density Length Saturation Angle Hue Slope Area Volume J. Mackinlay, Automating the Design of Graphical Presentations of Relational Information, ACM Transactions on Graphics 5(2), 1986

Quantitative

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| Position | Position | |

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Position

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Saturation Texture

Hue Connection

Texture Containment

Connection Density

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Angle

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Area

Volume

| Length | Density | Hue |
|---|-------------|------------|
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| Slope | Hue | Connection |
| Area | Texture | Containmer |
| Volume | Connection | Density |
| Density | Containment | Saturation |
| Saturation | Length | Shape |
| Hue | Angle | Length |
| | Slope | Angle |
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