

## OBJECT RECOGNITION: CHAPTER 2

### PERCEPTION

- Purpose of Perception

- Perception:

- Our \_\_\_\_\_ help determine which stimuli we perceive.

### HISTORY OF RESEARCH IN OBJECT PERCEPTION

- GESTALT PSYCHOLOGISTS:

- Organization in Visual Perception:

### Gestalt Principles of Perceptual Grouping

- Closure

- Proximity

- Similarity

- Good Continuation

- Familiarity

## MORE PRINCIPLES OF PERCEPTUAL ORGANIZATION

- **Perceptual constancy**
  - **shape constancy**
  - **size constancy**
  - **Size Constancy: Illusions**

## PERCEPTUAL SEGREGATION: HOW OBJECTS ARE SEPARATED

- *Separate the object from its surroundings.*

### Some Properties of Figure-Ground Segregation

- The figure is more \_\_\_\_\_ than the ground.
- The figure is seen as being \_\_\_\_\_ the ground.
- The ground is seen as \_\_\_\_\_ the figure.
- The contour separating the figure from the ground appears to \_\_\_\_\_.
- \_\_\_\_\_ are more likely to be seen as figures.
- When you are perceiving the one pattern as figure, \_\_\_\_\_.

### Subjective or Illusory Contours (ICs)

- **2 Factors that Help Explain ICs:**

## THEORIES OF PATTERN RECOGNITION

### ■ TEMPLATE-MATCHING THEORY:

- Limitations

### • FEATURE ANALYSIS OR DISTINCTIVE FEATURES MODELS

#### ■ Definition:

#### ■ Pattern Recognition:

#### ■ Eleanor Gibson's Feature Analysis Theory:

#### ■ Feature Detectors found in non-human species:

- Hubel & Weisel's cats (1959, 1965, 1979):

- Evidence of feature detectors in the brain.

#### ■ PROBLEMS WITH FEATURE ANALYSIS THEORIES

- De-emphasize the effects of
- word superiority effect
- The theory is not complete

## RECOGNITION BY COMPONENTS: BIEDERMAN (1987, 1990, 1995)

- The basic assumption
- Geons
- Object recognition
- Evaluation of Recognition by Components:

### Top-Down & Bottom-Up Processing

- Bottom-up
- Top-Down Processing
- Perception

### IS FACE PERCEPTION SPECIAL?

- Many researchers argue that face perception is "special"; \_\_\_\_\_  
\_\_\_\_\_.
- We recognize faces in terms of \_\_\_\_\_, rather than in terms of their \_\_\_\_\_ (Tanaka & Farah, 1993).
- Other objects (e.g., house) we recognize  
\_\_\_\_\_.

### **IS FACE PERCEPTION SPECIAL?**

- This image of Lincoln's face upside down vs. upright
- fMRI studies have found

- Neuroscience Evidence:

- Prosopagnosia:
  - Research using monkeys

### **APPLIED RESEARCH ON FACE PERCEPTION**

- Kemp et al.'s (1997) Credit Card Photo Study:

- IV:

- DV:

- Results:

- unchanged appearance:

- changed-appearance:

- matched foil:

- unmatched foil:

- Applications?