

## Supplemental Results

This section provides additional examples and extended analysis supporting the main experimental results.

### Extended Quadrant Examples

#### Quadrant 1: Advanced Sensory Processing

##### **Example: Visual Scene Recognition**

**States:** {indoor\_scene, outdoor\_scene, urban\_scene, natural\_scene} **Observations:** {geometric\_patterns, organic\_patterns, human\_made\_objects, natural\_elements}

**Actions:** {foveate\_center, pan\_left, pan\_right, zoom\_in, zoom\_out}

##### **Generative Model:** $[A =$

$$\begin{pmatrix} 0.8 & 0.1 & 0.9 & 0.2 \\ 0.1 & 0.8 & 0.05 & 0.7 \\ 0.05 & 0.05 & 0.03 & 0.05 \\ 0.05 & 0.05 & 0.02 & 0.05 \end{pmatrix}$$

]

##### **Preference Structure:** $[C =$