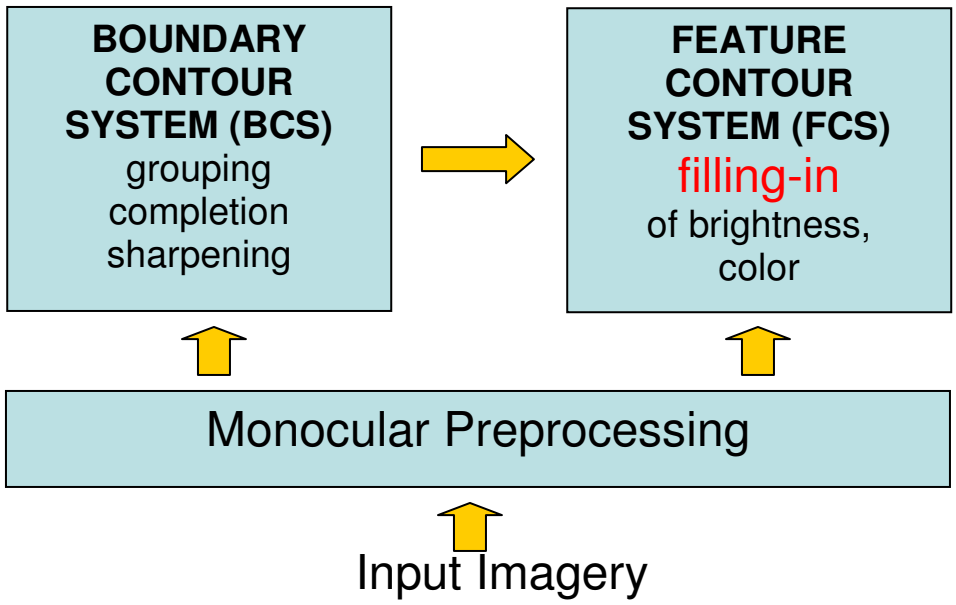
In vision, filling-in refers to a process of perceptual completion by which a coherent percept is produced by brain in lack of isomorphic visual feature representation of a surface stimulus.

Diffusive filling-in refers to a process of spreading neural activity representing visual features within a bounded region that corresponds to a visual image segment.

The model of diffusive filling-in assumes spreading of neural activity within a syncytium of cells

Syncytium is an array of interconnected cells such that contiguous cells can easily pass signals between each other. Due to the syncytial coupling of each cell with its neighbors, the activity can rapidly spread to neighboring cells.

The model of diffusive filling-in (Cohen & Grossberg, 1984) suggests computation of visual features and image boundaries performed separately by Boundary Contour System (BCS) and Feature Contour System (FCS) and subsequent gating of FCS activity by BCS signals.



Surface filling-in is

unoriented, outward, sensitive to direction-of-contrast