Lecture 4 Reading Summary

Preattentive Processing or attention and visual memory in the context of visualization and computer graphics is the subconscious and involuntary processing of visual information that happens before conscious awareness. It is super important as it helps us identify and group images with minimal efforts. Motion, color and orientation can be processed preattentively.

According to the theories of parallel processing, visual systems process information in parallel with different processes responsible for a variety of features such as motion, orientation, color etc. According to the theory of Salience, visual stimuli guides attention. This is determined by contrast, color and spatial frequency. The Boolean Map theory portrays that visual attention can be modeled as a Boolean map irrespective of the focus on a specific region in the visual field. This theory can be used to develop visual attention prediction algorithms. In the guided search theory, attention is channeled by visual system in a serial, top-down manner to find objects on the basis of position in the visual field and features. The ensemble coding theory refers to the way the visual system processes and categorizes similar visual stimuli as a single entity.

Visual expectation, or prior knowledge, affects attention and interpretation of visual information. Visual memory, essential for effective recall of information, is influenced by factors such as visual expectation, ensemble coding, and preattentive processing. The interaction between visual expectation and memory affects what is remembered and how it is remembered.