The functional architecture of visual motion perception .

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Recent psychophysical innovations utilizing complex motion stimuli reveal three orders of perceptual motion computation: First-order detects movement of (ordinary) luminance modulations. Second-order can detect motion in stimuli in which expected luminance is the same everywhere but some property, such as an area of higher contrast or of flicker, moves. Third-order detects movement of feature salience: that is, changes in location of areas marked as "important". First- and second-order mechanisms use a primitive motion-energy algorithm, are primarily monocular, and fast. The third-order mechanism is binocular, slower but extremely versatile, and is strongly influenced by attention. Separate left- and right-eye computations for Fit-order and Second-order imply a total of five perceptual motion computations, all carried out in parallel.