

Natural scene statistics of figure-ground motion in MT receptive fields

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Introduction

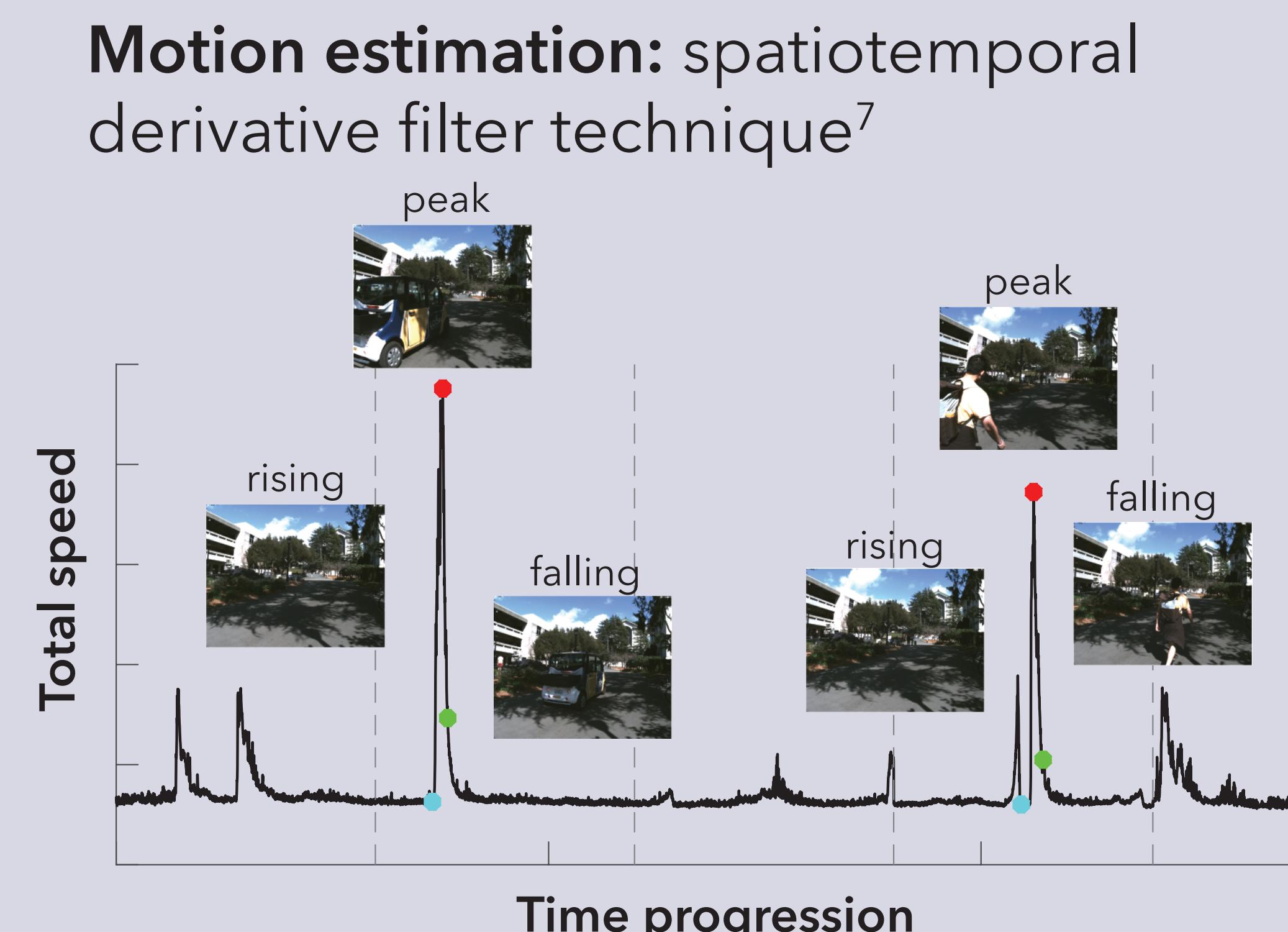
Differentiating figural content from its surroundings (figure-ground segregation) is a challenging task in natural environments. Motion has been found to be an important cue for grouping and object segmentation^{1,2}. The middle temporal cortex (MT) in macaques plays an important role in motion and depth processing^{3,4}. Recent work suggests that MT neurons are capable of representing multiple motion speeds⁵ and sensitive to the spatial arrangement of visual stimuli⁶, and thus likely play a role in figure-ground segregation.

Question: Are there statistical regularities in the motion of natural scenes that MT neurons may exploit for figure-ground segregation?

To explore this, we calculated motion statistics (speed and orientation) in patches of natural videos simulating MT RFs.

Methods

Dataset: 11 scenes of UC Berkeley campus, stationary camera, 1280 x 1024px, 60Hz, uncompressed



References

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Acknowledgements

NIH grant R01EY022443

Results

