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16720F13 Computer Vision

Assignment4

Motion Tracking

Section 1: Lucas-Kanade

Q1.1 ATA is the Hessian, also known as the structure tensor or second-moment matrix, which is a matrix based on the gradients of a function by summarizing the principle directions of the gradient at a specific point.

ATA must be invertible in order to optimize the solution for the linear system for A\*Δp = b. In addition, the values of ATA should not be too small – both eigenvalues should be non-negligible (and can’t be zero because of invertibility). Similarly, the ratio of the larger eigenvalue to the smaller eigenvalue should not be too large.

Q1.2 asdf

Relevant files: LucasKanade.m

Q1.3 To track