

1098-62-162

Ali A Al-sharadqah* (alsharadqaha@ecu.edu), Department of Mathematics, Austin 323D, East Carolina University, Greenville, NC 27858. *A New ‘non-minimization’ approach and its applications in Computer Vision.*

The technique of “renormalization” for geometric estimation attracted much attention when it appeared in early 1990s for having higher accuracy than any other then known methods. The key fact is that it directly specifies equations to solve, rather than minimizing some cost function. “non- minimization approach” will be exploited to modify renormalization so that it outperforms the standard reprojection error minimization. Doing a precise error analysis in the most general situation, we derive a formula that maximizes the accuracy of the solution; we call the resulting scheme hyper-renormalization. Applying it to ellipse fitting, fundamental matrix computation, and homography computation, we conclude that it is the best strategy that we can take. Our emphasis is on the general principle, rather than on individual methods for particular problems. (Received January 23, 2014)