(Not) Rough Around the Edges – Polynomial Shearlets on the Torus

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Abstract

Edge detection represents an important task in signal processing. But while jump discontinuities in onedimensional data are entirely characterized by their location, the formulation of corresponding higherdimensional problems might include questions about local geometric properties of an edge, such as orientation or curvature.

We present an approach to characterize certain types of smooth edges on the twodimensional torus via shearlet transformation which was inspired by work on the real plane. In our periodic setting, the utilized shearlet system consists of trigonometric polynomials. Their corresponding shearlet coefficients allow conclusions concerning location and orientation of edges by their decay behavior.

The discussed construction and results can be found in [1].

References

[1]   K. Schober, J. Prestin, and S. Stasyuk. "Edge detection with trigonometric polynomial shearlets". In: *Advances in Computational Mathematics* 47 (Feb. 2021).

The investigation of these results is part of my master's thesis. The presentation is therefore given within the context of my progress at the time of the conference.