Weighted robust Basis Function for phase unwrapping

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Abstract

This work presents a robust algorithm for phase unwrapping. The proposed algorithm is based on the expansion of the estimated phase through a linear combination of a set of Basis Functions. We present a novel weighted robust functional which is minimised using a two step strategy. This model allows us to reduce the influence of noise and to remove inconsistent pixels in the estimation of the unwrapped phase. The proposed model assumes that the phase is smooth. Under this assumption, experiments demonstrate that if the phase is corrupted by high levels of noise, our model presents a better performance than state of the art algorithms. For low levels of noise, the results are comparable.