

A RESTORATION NETWORK AS AN IMPLICIT PRIOR

ULUGBEK KAMILOV

Image denoisers have been shown to be powerful priors for solving inverse problems in imaging. In this work, we introduce a generalization of these methods that allows any image restoration network to be used as an implicit prior. The proposed method uses priors specified by deep neural networks pre-trained as general restoration operators. The method provides a principled approach for adapting state-of-the-art restoration models for other inverse problems. Our theoretical result analyzes its convergence to a stationary point of a global functional associated with the restoration operator. Numerical results show that the method using a super-resolution prior achieves state-of-the-art performance both quantitatively and qualitatively. Overall, this work offers a step forward for solving inverse problems by enabling the use of powerful pre-trained restoration models as priors.