

Blind image reconstruction: from LMMSE estimators to convergent plug and play approaches

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Blind inverse problems arise in signal/image processing applications where both the image and the forward model are unknown. In this talk, we present two complementary approaches to blind image reconstruction, highlighting the transition from linear to nonlinear estimators. We first analyze LMMSE estimators in the blind setting, characterizing their sample complexity and reconstruction error. We then consider a nonlinear framework based on plug-and-play regularization applied jointly to the image and the kernel, and propose a PALM-inspired algorithm with convergence guarantees.