Learning better Models for Imaging

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In this talk, I will show our recent activities in learning better models for inverse problems in imaging. We consider classical variational models used for inverse problems but generalized these models by introducing a large number of free model parameters. We learn the free model parameters by minimizing a loss function comparing the reconstructed images obtained from the variational models with ground truth solutions from a training data base. We show applications to different inverse problems in imaging where we put a particular focus on image reconstruction from undersampled MRI data. It turns out that the learned models yield significantly better results compared to state-of-the-art models.