

SPARSITY-INSPIRED REGULARIZATION FOR IMAGE RECONSTRUCTION

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In this talk, I will introduce a generic framework for learning filter-based regularization functionals from image data. If we pursue a variational reconstruction ansatz for solving inverse problems, these can be deployed to a variety of different imaging modalities (universality). Further, this ansatz ensures data consistency and we are able to derive some stability guarantees. Obeying with such paradigms is very important when working in critical applications such as medical imaging, since false diagnosis can have fatal consequences. After introducing the baseline architecture, I will discuss an improvement of this architecture via conditioning on the data. In the last part of the talk, I will present numerical results for denoising and MRI. These indicate that even relatively restricted architectures can be able to achieve highly competitive performance.