Special Issue

Self-Supervised Deep Learning for Compressed Sensing-Based Recovery

Message from the Guest Editor

For many biomedical applications, deep learning (DL)-based recovery methods have shown great potential to improve signal quality and/or accelerate the acquisition process. Recent evidence suggests that DL-based methods can outperform sparsity-driven recovery methods, especially for biomedical imaging. Typically, these DL-based methods rely on supervised learning to train a convolutional neural network (CNN) that recovers signals from noisy and potentially incomplete data. Other supervised learning techniques are inspired by variational optimization methods where an iterative algorithm is unrolled and iterates between data consistency enforcement and CNN application, which provides regularization. Despite the improvements offered by DL-based methods, their extension to applications where training data are scarce remains challenging.

In this Special Issue, we explore self-supervised methods that not only provide state-of-the-art performance but also lower the demand for the training data and thus extend the benefit of DL-based signal recovery methods to broader applications.

Guest Editor

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