

# Task-Adapted Reconstruction in Computed Tomography: Microlocal Analysis meets Deep Learning

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Inverse problem regularization plays currently an important role in medical imaging. They typically involve the reconstruction of an image from a set of indirect measurements, coming from medical devices. The reconstruction itself is computationally expensive, and at the same time, not the last step in the medical imaging workflow. After an image is reconstructed, it still needs to be analysed in order to produce a diagnose, what we call, a decision making step, or a task. This analysis is either done by an expert or automatically, but most of the time the analysis is independent of the reconstruction procedure, without taking into account possible errors. In this talk I will present a framework where, both the reconstruction and the task are integrated, making possible to generate reconstructions adapted to the particular task. I will also use this framework, for tomographic reconstruction, in order to use information provided by the Wavefront set of the data and perform reconstructions with correct singularities.