Structured Sparsity in Numerical Optimisation

Matteo Frigo
University of Côte d'Azur, Inria (France)
Athena Project-Team

`matteo.frigo@inria.fr`

Abstract

A significant portion of the challenges in applied mathematics can be formulated as a convex optimisation problem. The question about how to solve this problems is the first that will be addressed in this talk; in particular we will focus on the class of proximal splitting methods, which provides us many useful tools for solving non-smooth optimisation problems. We will also explore the concepts of sparsity and structured sparsity, showing how they turn out to be a valuable tool for designing specific models in medical imaging. The final part of the talk will be devoted to the case of brain connectivity mapping, which will give us the occasion to study a real world application of structured sparsity in numerical optimisation.

Keywords
Structured Sparsity, Convex Optimisation, Proximal Splitting Methods, Brain Connectivity