Inverse Problems Seminar

Learning regularizers - bilevel opitimization or unrolling

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Abstract

In this talk we will consider the problem of learning a convex regularizer from a theoretical perspective. In general, learning of variational methods can be done by bilevel optimization where the variational problem is the lower level problem and the upper level problem minimizes over some parameter of the lower level problem. However, this is usually too difficult in practice and one practically feasible method is the approach by so-called unrolling (or unfolding). There, one replaces the lower level problem by an algorithm that converges to a solution of that problem and uses the N-th iterate instead of the true solution. While this approach is often successful in practice little theoretical results are available. In this talk we will consider a situation in which one can make a thorough comparison of the bilevel approach and the unrolling approach in a particular case of a quite simple toy example. Even though the example is quite simple, the situation is already quite complex and reveals a few phenomena that have been observed in practice.

Date: March 22, 2023 (Wednesday)
Time: 4:00pm – 5:00pm (Hong Kong Time)
ZOOM link: https://cuhk.zoom.us/j/98241093146
Meeting ID: 982 4109 3146

All are Welcome