EE Department Seminars

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Proximal methods in stereo vision

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Proximal splitting algorithms [1] play a central role in finding the numerical solution of convex optimization problems. In this presentation, we will be interested in problems which can be formulated as the minimization of the sum of convex functions over closed convex constraint sets. To solve these problems, we employed two types of algorithms:

• Parallel ProXimal Algorithm +: this algorithm is used to solve the minimization of a sum of a finite number of convex functions, the proximity operator of each function is assumed to be known. One of the main advantages of this algorithm called PPXA+ is its parallel structure which makes it easily implementable on multicore architectures.

• Primal-dual algorithm:
these algorithms draw their simplicity and efficiency from the fact that they operate in a fully decomposed fashion in the sense that the operators and the linear transformations involved are activated separately at each iteration. The effectiveness of these algorithms is demonstrated for many applications (restoration, reconstruction...). In this talk, we will be interested in disparity estimation problems. Various simulation results illustrate the good performance and behaviour of the proposed approach.