Sampling and reconstruction of graph signals: An overview of recent graph signal processing results

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***Abstract*—Networks are structures that encode relationships between pairs of elements of a set. The simplicity of this definition drives the application of graphs and networks to a wide variety of disciplines. While often networks have intrinsic value and are themselves the object of study, in other occasions the object of interest is a signal defined on top of the graph, i.e., data associated with the nodes of the network. This is the matter addressed in the field of graph signal processing (GSP), where the notions of, e.g., frequency, filtering, or stationarity have been extended to signals supported on graphs. The goal of this talk is to review recent results on reconstruction of graph signals from observations taken at a subset of nodes. Leveraging the notions such as the Graph Fourier Transform and graph filters, we begin by analyzing the reconstruction under the assumption that the signal of interest lies on a known subspace which depends on the supporting graph. We then move to blind setups and describe efficient algorithms to address the reconstruction. The last part of the talk reviews kernel-based and non-linear approaches, establishing relations with semi supervised learning and matrix completion approaches.**