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Graph Signal Processing for Analyzing Data from Interconnected Systems



Asst. Professor, Electrical Engineering University of South Florida

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ZOOM VIRTUAL MEETING Free and Open to the Public Pre-registration required

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Abstract:

Many natural and engineered systems consist of interconnected components that their dynamics and interactions collectively define the state and behavior of the system. Examples of such systems include cyber physical systems, such as smart grids and smart critical infrastructures, as well as biological systems, such as human brain. The advancements in sensing and monitoring technologies, the availability of large volume of data and adoption of data analytics and machine learning techniques in these systems have provided new opportunities to better analyze, understand and improve their operation and behavior. A new perspective and technical paradigm in analyzing data from interconnected systems can be built through the fast-growing field of Graph Signal Processing (GSP). GSP extends the classical signal processing techniques and tools to irregular graph domain, which makes it suitable for analyzing structured data and the dynamics of systems with interconnected components. In this talk, an overview of GSP will be presented and example applications of the GSP-based techniques for analyzing data from smart grids, as an interconnected system, will be discussed.

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