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Invited Plenary Lecture

Presentation Title	City-Carbon Framework with Data-AI Fusion
Abstract (Approximately 200 words)	Urban carbon emissions account for more than 75% of the total, which has huge potential for carbon reduction. However, cities are high-dimensional systems with complex emergent phenomena based on complex human activities and traditional solid models are no longer enough to effectively describe them. To tackle the challenge, we propose the City-Carbon Framework with Data-AI Fusion. Drawing on the development trend of urban science and some of the landmark achievements of AI in recent years, we believe that the five-layered City-Carbon Framework of "Sensor-Network-Entity-System-Large Urban Model" would be the key to understand the law of urban energy consumption. With such framework, massive unstructured big data from multiple sources and matching AI methods can be combined to achieve long-term and sustainable mining and identification of urban patterns. Comprehensive and accurate metering of urban energy consumption is a key scientific issue facing all layers of the above system, for which the key challenges to be addressed are automated monitoring and labeling, capture of urban flows, coupling of spatial and temporal laws, agent modeling, and evolution of decision-making systems. We plan to conduct some preliminary studies in Hefei City to promote the scientific practice of the framework.
Biographical Sketch (Approximately 200 words)	Fengying Yan is a Chair Professor at Tianjin University (TJU) , as a member of the Urban-and-Rural Planning Discipline Review Group of the Academic Degrees Committee of the State Council and a board member of the Urban Planning Society of China, actively contributes to the field of sustainable planning and design methods through her research. She leads pivotal projects, including the National Key R&D Program "Planning Techniques for County Towns Based on Carbon Control System", the Key Project "Research on Data-intelligence-fused Key Mechanisms of Collaborative Carbon Control in Urban Spatial Planning and Governance" and the Special Funds Project "Multi-source Data-driven Research on Urban Anthropogenic Carbon Emissions and Low-carbon Planning Decision Support". She is committed to using urban planning as a framework and AI technology as an aid to promote energy efficiency in urban human activities at multiple scale levels.