UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

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The Dynamic Research Enterprise for Multidisciplinary Engineering Sciences
ZJU-UIUC Joint Research Center

ZHEJIANG UNIVERSITY

CIRCLE
Distinguished Lecture Series

Dr. John E. Taylor

Smart City Digital Twins:

Toward More Sustainable, Resilient, and Livable Cities

ABSTRACT: Recent reports by the National Academies have encouraged investment in developing a more comprehensive understanding of network dynamics at the intersection between human and engineered networks. Concurrently, cities are addressing rapid urbanization challenges by implementing socio-technological changes in their infrastructure systems as they evolve toward becoming smarter cities. The success of such an evolution, however, relies on solutions that can combine data from individual infrastructure components to urban scale networks. A great deal of research has focused on developing an understanding of data analytics at the scale of the city and of individual infrastructure components. However, there is a gap in our understanding, data collection approaches, and analytical methods to integrate and visualize such disparate data and complex network dynamics. This presentation will describe efforts to formalize and implement a Smart City Digital Twin platform, with an emphasis on efforts to understand, model, and improve energy consumption and disaster mobility across spatial scales in cities, to foster more sustainable, resilient, and livable cities.

BIO: Dr. John E. Taylor is the inaugural Frederick Law Olmsted Professor of Civil and Environmental Engineering at Georgia Tech, where he currently serves as the Associate Chair for Graduate Programs and Research Innovation in the School of Civil and Environmental Engineering. Dr. Taylor received his PhD from Stanford University in 2006. At Georgia Tech, he is founder and Director of the Network Dynamics Lab, which focuses on; (1) achieving sustained energy conservation by coupling energy use with occupant networks and examining inter-building network phenomena in cities, and (2) understanding and improving response times by affected human networks during extreme events in urban areas. Dr. Taylor's research has received over $8M in funding from the National Science Foundation, the Department of Energy, the Alfred P. Sloan Foundation, and other public and private funding sources. His research was awarded the National Science Foundation's CAREER Award in 2011. In 2020, Dr. Taylor was elected into the National Academy of Construction for his research and pedagogical efforts to improve urban sustainability and resilience and guide the evolution of smart cities. Dr. Taylor has authored over 250 technical publications, won five journal best paper awards, and founded two technology startups.

CIRCLE: The Center for Infrastructure Resilience in Cities as Livable Environments is one of three research themes supported by the joint Dynamic Research Enterprise for Multidisciplinary Engineering Sciences (DREMES), established between the University of Illinois at Urbana-Champaign (UIUC) and Zhejiang University (ZJU). The CIRCLE Distinguished Lecture Series is intended to provide opportunities for faculty and students to meet and interact with internationally renowned experts in the field.

To register send an email to circle@intl.zju.edu.cn or scan the QR code. Registration is free.

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Dr. John E. Taylor

智慧城市的数字孪生：

可持续韧性宜居城市

摘要：近期，美国国家科学院(National Academies）报告提出鼓励投资发展对人与工程网络交叉的网络动力学进行更全面的探索。与此同时，随着城市朝着更智慧的方向发展，各地市政部门正积极通过社会基础设施系统技术改革来应对快速的城市化挑战。改革的成功依赖于能够将单个基础设施组件的数据结合到整个城市规模的网络。因此，大量的研究都集中在如何识别城市规模和单个基础设施组件的数据分析。然而，在我们的理解、数据收集和分析中，整合并可视化这些不同的数据和复杂的网络动态方面仍存在差距。本次演讲将介绍在智慧城市数字孪生平台在实施方面所做的努力，重点是在城市空间尺度上介绍、建模和改善能源消耗和灾害流动性，以培育更具可持续性、韧性和宜居的城市。

简介：John E. Taylor 博士是佐治亚理工学院土木与环境工程的首任 Frederick Law Olmsted 教授，目前担任土木与环境工程学院研究生和研究创新项目的副主席。Taylor博士于 2006 年获得斯坦福大学博士学位。他是佐治亚理工学院网络动力学实验室的创始人和主任，该实验室专注于；(1) 通过将能源利用与居民网络耦合并检查城市中的建筑物间网络现象来实现持续节能，(2) 在城市地区极端事件期间通过受影响的人际网络了解和改善响应时间。 Taylor 博士的研究已从美国国家科学基金会(National Science Foundation)、能源部(Department of Energy)、阿尔弗雷德·斯隆基金会(Alfred P. Sloan Foundation)以及其他公共和私人资金来源获得超过 800 万美元的资助。他的研究于 2011 年获得美国国家科学基金会的 职业成就奖（CAREER Award）。 2020 年，Taylor博士因其在提高城市可持续性和韧性以及指导智慧城市发展方面的研究和教学努力而当选为国家建设学院(National Academy of Construction)成员。 Taylor 博士撰写了 250 多篇技术出版物，获得了5项期刊最佳论文奖，并创立了两家技术初创公司。

CIRCLE：宜居城市基础设施韧性中心是伊利诺伊大学厄巴纳–香槟分校（UIUC）格兰杰工程学院和浙江大学（ZJU）建立的三个联合研究中心之一。 CIRCLE 杰出讲座系列旨在为教师和学生提供与该领域国际知名专家会面和互动的机会。

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2021年8月11日 zoom | 北京时间：晚上9点

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