Ko-Chih Wang (Computer Science and Information Engineering, National Taiwan Normal University)

Title: Large-scale Scientific Data Analysis and Visualization

Abstract: As the advance of large-scale supercomputers enables scientists to model complex physical phenomena and produce a huge amount of datasets, handling these datasets to understand the science becomes a daunting challenge. In this talk, I will discuss how visualization helps scientific data understanding and the scheme to handle large-scale simulation datasets. The first part of the talk will briefly introduce the connections between visualization and data analysis. In the second part of the talk, I will discuss the challenges of scientific data visualization and analysis in the era of big data. In the end, I will finish the talk with two of my research works. One of the works uses in situ data processing and machine learning to facilitate large scientific data visualization and analysis. The other work uses Explainable AI (XAI) technique to deeply understand the behavior of machine learning models that emulate a scientific simulation. We develop a visual analytics tool based on the XAI technique to help scientists select critical simulation parameters to run the simulation and facilitate the scientific research pipeline.

Biography: Dr. Ko-Chih Wang is an Assistant Professor of Computer Science and Information Engineering at National Taiwan Normal University. He founded the ViDA (Visual Data Analysis) research group. His research interests include the data visualization and analysis of large scientific simulation data, computer graphics, and high-performance computing. He received the BS degree in computer science from Tunghai University, in 2004, and the MS degree from the Graduate Institute of Networking and Multimedia, National Taiwan University, in 2007, and the Ph.D. degree in computer science from The Ohio State University, in 2019