Auroop Ganguly

Complex Interconnected Systems

Risk-Informed Decisions for Situations of Compound Extremes

The presentation will start with an overview of the convergence of complexities in natural, human-engineered, and social systems that must be understood, and harnessed where possible, to augment our ability to adapt to global change at scales ranging from communities and cities to nations and our shared planet. The challenges and opportunities of innovative principles, novel technologies, and new data-driven sciences, such as urban bonds, safe-to-fail design, nature-based green infrastructure, generative machine learning, and physics-data-human integrated systems, will be briefly discussed. The presentation will then focus on a couple of case studies, one focused on explainable and physics-guided machine learning in water, weather and climate, and the other on data-driven sciences and network-based recovery in lifeline and ecological networks.

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