Machine learning in soft matter

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Developments in machine learning (ML) have opened the door to fully new methods for studying phase transitions due to their ability to extremely efficiently identify complex patterns in systems of many particles. Applications of machine learning techniques vary from the use of developing new ML-based methods for detecting complex crystal structures, to locating phase transitions, to speeding up simulations. The rapid emergence of multiple applications of machine learning to statistical mechanics and materials science demonstrates that these techniques are becoming an important tool for studying soft matter systems. In this talk, I will briefly present an overview of the work my group is doing on using machine learning to study soft matter systems with a focus on how machine learning might help us to understand the structure – or lack thereof – in glasses.