Seminar/Talk

Classical shadows: efficient quantum-to-classical converters with many applications

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Extracting relevant information from a quantum system as efficiently and tractably as possible is an important subroutine in most near-term applications of quantum hardware.We present an efficient method for constructing an approximate classical description of a quantum state using very few measurements of the state. This description, called a classical shadow, can be used to predict many different properties. The required number of measurements is independent of the system size and saturates information-theoretic lower bounds. I will also illustrate how one can combine classical shadows with machine learning (ML). This combination showcases that training data obtained from quantum experiments can be very empowering for classical ML methods. This is joint work with Robert Huang and John Preskill (both Caltech), as well as Giacomo Torlai (AWS) and Victor Albert (Qju Maryland)

Tuesday, November 16, 2021 11:30am - 12:30pm
Heinzel Seminar Room / Office Bldg West (I21.EG.101)

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