CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES
COLLOQUIUM

Friday, May 9
3:00 – 4:00 PM
Maria Sanford, Room 101

WAVELET BASED FINANCIAL FORECAST ENSEMBLE FEATURING HYBRID QUANTUM-CLASSICAL LSTM MODEL

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Abstract: One of the most sought-after goals in the financial world is a reliable method by which investors can predict a stock price movement consistently. Advancements in stock prediction via the use of machine learning have improved the accuracy of such predictions and yielded better ideas about value investments in the stock market. However, with the addition of the state-of-art tool M-band wavelet transform as a preprocessing step, we can denoise our raw data set (prior stock prices) and refine it to make the forecast even more accurate. Following this preprocessing step, multiple machine learning techniques are deployed to construct a robust, non-parametric hybrid forecasting model. To demonstrate the novelty of our algorithm, we present a case study on stock price prediction employing a discrete 4-band wavelet transform integrated with a hybrid machine learning ensemble. Our results underscore the potential and importance of such ensemble methods in refining the accuracy and reliability of financial forecasts. Furthermore, in theory, quantum computing can further optimize these algorithms, potentially leading to more precise stock price forecasts. In particular, our ensemble will feature a hybrid quantum classical LSTM Model to demonstrate the potential of both wavelets and quantum computing in stock forecasting.