At the Fields-China workshop 2018, we analyzed the average volatility structure for EUR/USD over the course of a 24 hour period. We identified a clear diurnal pattern with peaks found at the opening of the US and European trading sessions. There were also other notable but less pronounced peaks at the open of the Asian/Australian markets as well as at the turn of most hours. Analyzing how this daily pattern evolves over the course of several years and after performing function principal component decomposition, we identified that changes in volatility could be explained due to parallel shifts over the course of a 24 hour period as well as distinct changes in the volatility regime at the start/close of European and US markets.

Given this information, the past realized volatility and the current level of volatility, can we use deep machine learning to help provide some short-term volatility prediction? I.e. can we predict the price range of EUR/USD over some future horizon e.g. 5s, 10s, 30s window? Can we improve on the results from 2018? If we introduce other currency pairs to the machine learning model, do we improve the predictability of the currency pair in focus? Are some currency pairs more predictable than others?