1163-60-1233 **Andrew Papanicolaou*** (apapani@ncsu.edu), apapani@ncsu.edu. *Trade Signals In VIX Futures.*

VIX curves are used as input data for constructing trade signals. We assume that VIX futures curves come from a stochastic model, which provides us with a distribution of returns from trading. We use historical VIX data to estimate the model's parameters, and then we use a deep neural network to estimate the expected value of a reward function. We train this deep neural network with simulation-data generated from the VIX model. Training with simulation implies that historical data can only impact learning through the VIX model's parameters, yet even in this highly specified setting we can still observe trade signals that perform well when tested on out-of-sample data. Similar out-of-sample performance from deep-learning predictors have been observed in problems outside of finance, and is one of the reasons why machine learning and modern non-parametric statistics have recently gained so much attention. The contribution of this paper is a convincing application of deep learning in a financial setting and the demonstration of an improvement in trade signals when deep learning is applied. (Received September 15, 2020)