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# AN APPROACH TO IMPLEMENT CRYPTOGRAPHY IN QUANTUM NEURAL NETWORKS AND DNN-BASED KEY HIDING.

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In this paper, I want to explore a continuous variable quantum neural network which is efficient and contains the techniques and tricks to generate keys, encryption, and decryption.

One of the many methods known to the scientific community is the strawberry field platform on which we already have several simulation experiments. This has an optimal rate of learning of  $8e-2$ . Therefore, it has a much greater impact and application for the quantum devices. We know that classical cryptography is one of the most important aspect of the cybersecurity world and in this age of information we are more and more dependent on it. Neural Network is yet another field of study in which several researches have been established and cryptography now finds its application in that domain too. Neural networks can now be well within limits and control be trained to perform various encryption and decryption techniques.

The approaches of this paper will explore the security analysis of the entire scheme in detail and in depth. I will also be doing an in-depth survey of the algorithm in use i.e. CV-QNN algorithm along with encryption-decryption techniques, security-performance analysis, determining how much resistant can this technique be towards the cipher attack, system forgery attack and chosen-plaintext attack.

Additionally, one of many unanswered questions pertaining to this topic, the paper will mainly focus on the possibility of hiding the key to cipher in the deep neural network or the DNN based key hiding scheme.

#### **Major References consulted so far:**

- 1) Can deep text classifications be fooled in any way – B. Liang, H.Li, Miaoqiang Su, Pan Bian, X. Li, Wenchang Shi.
- 2) A Globally Encrypted, Locally Unencrypted DNN - Qiao Zhang, Hongyi Wu, Chunsheng Xin, Tran V. Phuong, Cong Wang