Abstract

Artificial Neural Networks (ANN) began as an imitation to the human brain on an electronic computers. The idea initiated in 1950s but it wasn't until the availability of the modern computational prowess that it took its present form. Owning to its generalisability, it has found a wide variety application ranging from Meme Generation to Entanglement Detection

Right around early 1990s, work began to extend the highly successful real valued ANN into the complex domain. But in all of its applications, the $\mathbb{C}$-ANN are proposed as useful only in cases where data is of complex nature. The $\mathbb{C}$-ANN is shown to perform better than $\mathbb{R}$-ANN when applied to inherently complex valued data.

We wish to see whether the $\mathbb{C}$-valued ANN's upper-hand over the $\mathbb{R}$-valued ANN is dependent on this complex nature of the data-set or not. We compare the performance of these two networks in tasks of logic gate simulation and entanglement detection.

In comparing the performance of the two networks, the $\mathbb{C}$-valued ANN takes lead for simple tasks like logic gate simulations, but this lead is ambiguous when the networks are tasked with entanglement detection.