

1151-42-281

Armenak Petrosyan* (petrosyana@ornl.gov), 1 Bethel Valley Rd, Oak Ridge, TN 37830, and **Anton Dereventsov** and **Clayton Webster**. *Neural network integral representations on the sphere for the ReLU activation function*. Preliminary report.

We present neural network integral representations as a generalization of shallow artificial neural networks. For the ReLU activation function, we derive an explicit reconstruction formula on the unit sphere under finite L_1 norm assumption on the outer weights. We further extend our theory to deep networks by introducing ResNet type integral representations. (Received August 20, 2019)