

1145-41-1748      **Soeren Dittmer\*** ([soeren.dittmer@gmail.com](mailto:soeren.dittmer@gmail.com)). *Singular Values for ReLU layers*. Preliminary report.

Singular values are one of the most important tools in linear algebra; we extend their definition to a class of non-linear operators which includes ReLU layers in artificial neural networks. We show how this inspires a new type of low-rank layer and explains the success of linear bottlenecks in networks. We will also discuss Gaussian mean width and its relation to data processed by neural networks. (Received September 24, 2018)