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**Emily J King\***, 1874 Campus Delivery, 111 Weber Bldg, Fort Collins, CO 80523-1874, and  
**Sören Dittmer** and **Peter Maass**. *ReLU-Singular Values and Gaussian Mean Width in Neural Networks*.

Feedforward neural networks are simply the composition of a sequence of functions alternating between various affine linear maps and a non-linear function called an activation function. One of the most common activation functions is the rectified linear unit ReLU, which maps negative components of a vector to zero and positive components to themselves. A layer of a network consists of a single affine linear map composed with the activation function. A new concept which generalizes singular values to the necessarily non-linear maps corresponding to layers with the ReLU activation function called ReLU-singular values will be introduced. One may leverage ReLU-singular values to prune the neural network. Gaussian mean width, which was originally introduced in high dimensional geometry may be used as another mathematical tool to analyze neural networks which seems to yield information about the success of the neural network in performing the task it was trained to do. (Received September 13, 2019)