Deep Learning and quantum many-body problem
Further opening the black box of Deep Learning via quantum many-body problem, survey and perspectives

F.-D. Collin 1

¹Université de Montpellier, CNRS, IMAG UMR 5149

Generalities on Deep Learning	Fractality
Input layer Hidden layer 1 Hidden layer 2 Hidden layer 3 Output layer x_2	Hamiltonian
$egin{array}{cccccccccccccccccccccccccccccccccccc$	Perspectives
Figure 1. Example of a <i>feedforward</i> neural network. Each layer is a tensor operation taking f_i the previous layer output tensor as input. The final function $f(\mathbf{x}) = f^{(3)}\left(f^{(2)}\left(f^{(1)}(\mathbf{x})\right)\right)$ is the composition of the tensor operations.	
[1] illustrates this.	
Tensor Networks on nbody quantum problem	
DL/nbody coupling	

References

[1] Ian Goodfellow, Yoshua Bengio, and Aaron Courville. Deep learning. MIT press, 2016.