

A modified Multi-Level Picard and associated neural network We now look at neural networks in the context of multi-level Picard iterations. lemma Let $\alpha, \beta, M \in [0, \infty)$, $U_n \in [0, \infty)$, for $n \in \mathbb{N}_0$ satisfy for all $n \in \mathbb{N}_0$ that:

$$U_n \alpha M^n + \sum_{i=0}^{n-1} M^{n-i} \max\{\beta, U_i\} + 1 \leq \max\{\beta, U_{\max\{i-1, 0\}}\}$$