

Method 2 rank selection

Variational Bayesian Matrix Factorization

Acts as a good heuristic, but not guaranteed to yield the optimal ranks for the master problem

Given a matrix \mathbf{V} it is assumed:

$$\mathbf{V}^{L \times M} = \mathbf{U}^{L \times M} + \mathbf{E}^{L \times M}$$

Goal is to find matrices \mathbf{A} and \mathbf{B} such that

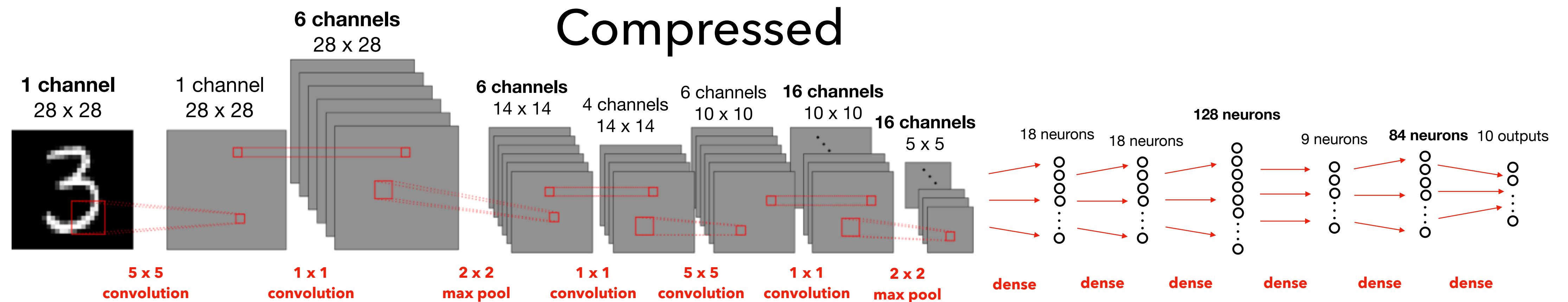
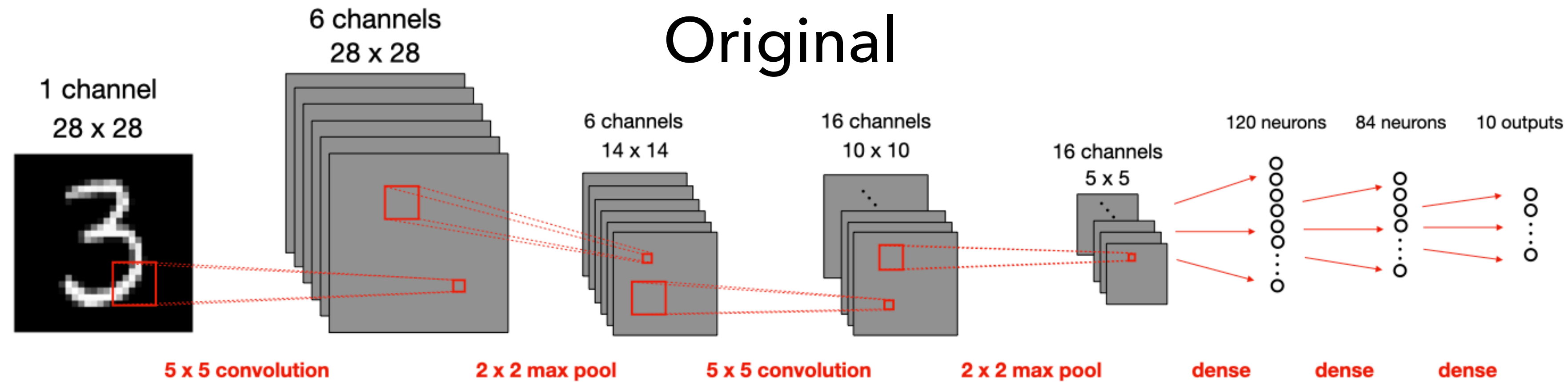
$$\mathbf{U} = \mathbf{B}\mathbf{A}^\top$$

Probabilistic model of \mathbf{V} gives the posterior distributions of \mathbf{A} and \mathbf{B}

Generally a non-convex problem, but analytical solution have been found

Method 2 results

MNIST



The channels marked with **bold** correspond to the layer in the original model