



**Deterministic Algorithm**

• Stack  $S_1^{(1)}, \dots, S_t^{(1)}$  to get a matrix  $Q^{(1)}$

$$r^{(1)} = \frac{\alpha}{\sqrt{n}} \begin{array}{|c|} \hline Q^{(1)} \\ \hline \end{array} \begin{array}{|c|} \hline u \otimes v \\ \hline \end{array} + \begin{array}{|c|} \hline Q^{(1)} \\ \hline \end{array} \begin{array}{|c|} \hline \text{vec}(G) \\ \hline \end{array}$$

- Based on  $r^{(1)}$  pick  $Q^{(2)}[r^{(1)}]$

# Deterministic Algorithm

- Stack  $S_1^{(1)}, \dots, S_t^{(1)}$  to get a matrix  $Q^{(1)}$

$$r^{(1)} = \frac{\alpha}{\sqrt{n}} \begin{matrix} \text{blue box} & Q^{(1)} \end{matrix} \begin{matrix} \text{red box} & u \otimes v \end{matrix} + \begin{matrix} \text{blue box} & Q^{(1)} \end{matrix} \begin{matrix} \text{red box} & \text{vec}(G) \end{matrix}$$

- Based on  $r^{(1)}$  pick  $Q^{(2)}[r^{(1)}]$

# Bayes Risk Lower Bounds