



**Deterministic Algorithm**

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

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

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

2

9

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# Bayes Risk Lower Bounds