

An Example

Step 4: Remove from c its projection onto the span of q_1 and q_2

$$C = c - (q_1, c)q_1 - (q_2, c)q_2$$

Step 5: Normalize C

$$q_3 = \frac{1}{\|C\|} C$$

Ex: Consider

$$a = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}, b = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, c = \begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix}$$

Step 1:

$$q_1 = \frac{1}{\sqrt{2}} \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$$