

3d Game Programming with DirectX 11

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1 Vector Algebra

1.1 Orthogonalization

For a set of vectors $\{\mathbf{v}_0, \mathbf{v}_1 \cdots \mathbf{v}_n\}$, the process is:

$$\begin{aligned}\mathbf{w}_0 &= \mathbf{v}_0 \\ \mathbf{w}_i &= \mathbf{v}_i - \sum_{j=0}^i \text{proj}_{\mathbf{w}_j}(\mathbf{v}_i) \\ \mathbf{w}_i &= \frac{\mathbf{w}_i}{\|\mathbf{w}_i\|}\end{aligned}$$