$V(s_1) = w \cdot 1$ $\quad$ Init: $w = 1$. $\quad$ $V(s_1) = 1$

$V(s_2) = w \cdot 2$. $\quad$ $V(s_2) = 2$.

$$1.8 \quad V^*(s_1) = \underset{0}{C(s_1, a)} + \underset{0.9}{\gamma} \underset{2.0}{V^*(s_2)}$$

$$1.8 \quad V^*(s_2) = \underset{0}{C(s_2, a)} + \underset{0.9}{\gamma} \underset{2.0}{V^*(s_2)}$$

Find w that minimizes squared error.

$$\min_w \left(V^*(s_1) - w \cdot 1 \right)^2 + \left(V^*(s_2) - w \cdot 2 \right)^2$$

$$\frac{\partial}{\partial w} \left[\left(1.8 - w \cdot 1 \right)^2 + \left(1.8 - w \cdot 2 \right)^2 \right] = 0$$

$$-2(1.8 - w) - 2(1.8 - w \cdot 2) \cdot 2 = 0$$

$$5w = 1.8 + 1.8 \times 2 = 5.4$$

$$w = \frac{5.4}{5} = 1.08$$

$$V^*(s_1) = w \cdot 1 = 1.08 \times 1 = 1.08$$

$$V^*(s_2) = w \cdot 2 = 1.08 \times 2 = 2.16$$

MSE : (