

$$Q(s_t, a_t) = E[R_{t+1} + \gamma R_{t+2} + \gamma^2 R_{t+2} + .. | s_t, a_t]$$

$$Q(s_t, a_t, g) = E[R_{t+1} + \gamma R_{t+2} + \gamma^2 R_{t+2} + .. | s_t, a_t, g]$$

$s_1, a_1, r_2, s_2, g$
$s_2, a_2, r_3, s_3, g$
$s_3, a_3, r_4, s_4, g$
$\dots$
$s_4, a_4, r_5, s_5, g$

$s_1, a_1, r_2', s_2, g'$
$s_1, a_1, r_2'', s_2, g''$
$s_2, a_2, r_3''', s_3, g'''$
$s_2, a_2, r_3'''', s_3, g''''$
$\dots$