

## Value Iteration

Value\_Iteration(S,A,P,R, $\gamma$ ):

For all  $s \in S$   $\hat{U}_0(s) \leftarrow 0$

$i \leftarrow 0$

Repeat

$i \leftarrow i+1$

For all  $s \in S$

$$\hat{U}_i(s) \leftarrow R(s) + \gamma \max_{a \in A} \sum_{s' \in S} [P(s' | s, a) \hat{U}_{i-1}(s')]$$

Until <stopping condition> /\* for example: for all  $s$   $|\hat{U}_i(s) - \hat{U}_{i-1}(s)| < \varepsilon$  for some  $\varepsilon^*$  \*/