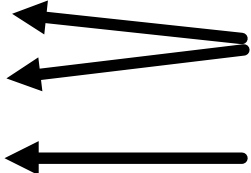


Implementing Value Iteration

- 1. Make it work
 - 2. Make it right
 - 3. Make it fast
- Problem 4
- Problem 5
- 
- The diagram shows two arrows originating from the text 'Problem 4' and pointing to the first two items of the list: '1. Make it work' and '2. Make it right'. A single arrow originates from the text 'Problem 5' and points to the third item of the list: '3. Make it fast'.

First step for making it fast (in any language, not just julia):

Find out what is slow (by profiling)!

Bellman Operator

$$U' = B[U]$$

$$B[U](s) = \max_a \underbrace{\left(R(s, a) + \gamma \sum_{s'} T(s' \mid s, a) U(s') \right)}_{Q(s, a)}$$

i = index of s ; j = index of s'

Naive implementation:

$$U'[i] = \max_a \left(R[a][i] + \gamma \sum_j T[a][i, j] U[j] \right)$$

$$y = Mx$$

$$y[i] = \sum_j M[i, j] x[j]$$