1 Probabilistic Reasoning

2 Making Decisions

2.1 Utility Theory (1)

The lottery over A and B that is indifferent to C must be of the form [p, A; 1-p, B]. It must also satisfy this equation to be indifferent to C: $p * U(A) + (1 - p) * U(B) = U(C)$
That can be resolved as $p * 455 + (1 - p) * (-150) = 50$ and finally $p = \frac{200}{605} = 0,331$. The lottery over A and B is therefore [0,331, A; 0,669, B].

2.2 Utility Theory (2)

The given lotteries are [0,5, B; 0,5, C] and [1, A] = A. The expected Utilities of these are: $U([0,5, B; 0,5, C]) = 0,5 * U(B) + 0,5 * U(C) = 0,5 * 20 + 0,5 * 0 = 10$ and $U(A) = 5$. Therefore the lottery [0,5, B; 0,5, C] is preferred to the lottery [1, A].

2.3 Markov Decision Processes (MDPs)

2.3.1 Computing discount factor γ