Problem

P (Target in Cell ¡ |Observations up to time t ∧ Failure in Cell j)

= P(Target in Cell i, obs up to time t, failure in cell j) / P(obs upto time t, failure in cell j)

= P(Observations up to time t) * P(target in cell i | Obs up to time t) * P(failure in cell j | target in cell I, obs up to time t) / [P(obs up to t) * P(B | obs up to t)]

= P(target in cell i | obs up to t) * P(fail in cell j | target in cell i) / P [(fail in cell j | obs up to time t)]

P(target in cell i | obs up to t) = B_{t}

P(fail in cell j | target in cell i) = Value of Probability of current cell

P(fail in cell j | obs up to time t)] = Total value of all the observations. (Normalization factor)

Problem 2

P (Target found in Celli | Observations t)

P(Target is in Cell i ∧ Success in Cell i | Observations t)
P(Success in Cell i) * P(Target is in Cell i | Observations t)
(1 - FNR(terrain)) * Belief [Cell i]