Ex 2.1

① Motion model: [action, belief]

if action == "f"

↳ correct → 0.7 × bel[i−1] [i > 0]

↳ incorrect → 0.1 × bel[i+1] [i < n−1]

if action == "B"

↳ correct → 0.7 × bel[i+1] [i < n−1]

↳ incorrect → 0.1 × bel[i−1] [i > 0]

if in place

↳ 0.2 × bel[i]

new_belief = belief. } return belief.

Motion model is the belief prediction. Only takes u_t into consideration. We need to add the correction step and normalize it.

② sensor model. [observation, world, belief]

if observation == world[i]:

likelihood(W|W) = 0.7

likelihood(B|B) = 0.9

else:

" (B|W) = 0.3

" (W|B) = 0.1

new_bel[i] = likelihood * bel[i]

new_bel = new_bel / np.sum(new_bel) } normalize.

return new_bel.

③ Recursive bayesian model: [actions, belief, world, observations]

First we make predictive motion model. Only using u_t.

⇒ for i in range(len(actions)):

belief = motion_model(actions[i], belief)

if i < len(observation):

belief = sensor_model(belief, world, observations[i])

if i > len(observation)

there wouldn't be any value corresponding to the index.

return belief.