A screen shot of a computer

Description automatically generatedA screen shot of a computer

Description automatically generated

A screen shot of a computer

Description automatically generated

I have initialized a 2D array called as maze which has 3.23 for all the Open Square and -1 for wall.

I have implemented two Methods:

1)Filtering: In filtering, I have included conditional probability and filtering process of Forward Algorithm.

2)Prediction: In prediction, I have included transition probability and prediction process of Forward Algorithm.

Filtering and Conditonal Probability:

* I am passing an evidence given by the professor to the Filtering Method.
* For each open square, I call getAdjacentEdges method and that returns what’s on its West, North, East and South Directions.
* For instance, if getAdjacentEdges returns [S, O, S, O] it means that the maze has an Open square on it’s West and East and has an obstacle on North and South.
* Now, I am comparing with a given evidence and if each open square’s adjacent neighbors match with given evidence then it indicates there is no error otherwise conditional probability gets multiplied with 1-error\_rate and calculate conditional probability.
* These conditional probabilities are stored in evidenceMatrix. Each cell of evidenceMatrix gets multiplied with corresponding cell of matrix and get’s stored in the maze matrix.

Prediction and Transition Matrix:

* I am passing ‘N’ for Prediction after Action N and ‘E’ for Prediction after Action E to the prediction method.
* Initializing transition matrix to -1 for all the obstacles and 1 to all open squares.
* Call getAdjacentEdges method to get what’s on its West, North, East and South Directions.
* Transition probability of each open square say O[i][j] is calculated based on the probability of robot at each adjacent open squares namely O[i-1][j],O[i+1][j],O[i][j-1],O[i][j+1] in moving to O[i][j]. Transition probability is calculated differently for each North and East directions