

S³

Missionaries and Cannibals Game

Team Members :

- Salma Ashraf el-khshen سلمى اشرف الخشن
- Sally Mohammed Ali سالي محمد علي
- Salah Eldin Fikri Abdelsameia صلاح الدين فكري عبدالسميع

Agent Design of Missionaries and Cannibals Game:	(PEAS)
1. Performance:	Percentage of players in the correct Game, fast.
2. Environment:	Gamer, Game.
3. Actuators:	screen display (show game what happened) .
4. Sensors:	keyboard (Entry of Arrows moving), Mouse, Touch screen.

Agent Design of Missionaries and Cannibals Game: (ODESDA)

Task environment	Observable	Deterministic	Episodic	Static	Discrete	Agent
Missionaries and Cannibals	fully	Deterministic	sequential	Static	Discrete	single

Goal-based agent:	Yes
What is the goal to be achieved?	My goal is to make all the demons and the humans on one edge without any humans being eaten.
What are the actions that are available to the agent?	Move one demon and one human or two demons or two humans.
What information is necessary to encode about the world to sufficiently describe aspects of the world that are relevant for accomplishing the goal?	Only one world.

Problem formula of Missionaries and Cannibals Game

- **Initial state** : Missionaries and Cannibals on the Right side of river $\langle 3,3 \rangle \langle 0,0 \rangle$.
- **Goal state**: Missionaries and Cannibals in left side of river. $\langle 0,0 \rangle \langle 3,3 \rangle$
- **Successful Function**:

Successful Functions are as follows.

-R1:Move $\langle 2M,0C \rangle \rightarrow$ Boat Carrying 2 missionaries












-R2: Move $\langle 1M,0C \rangle \rightarrow$ Boat Carrying 1 missionarie

-R3:Move $\langle 1M,1C \rangle \rightarrow$ Boat Carrying 1 missionarie and 1 Cannibal.

-R4:Move $\langle 0M,1C \rangle \rightarrow$ Boat Carrying 1 Cannibal.

-R5:Move $\langle 0M,2C \rangle \rightarrow$ Boat Carrying 2 Cannibals.

- **Solution Strategy**:

Sl .No.	Initial state	Rule	Next State
1	$\langle 3,3 \rangle \langle 0,0 \rangle$ The Intial state	R5 	$\langle 3,1 \rangle \langle 0,2 \rangle$
2	$\langle 3,1 \rangle \langle 0,2 \rangle$	R4 	$\langle 3,2 \rangle \langle 0,1 \rangle$
3	$\langle 3,2 \rangle \langle 0,1 \rangle$	R5 	$\langle 3,0 \rangle \langle 0,3 \rangle$
4	$\langle 3,0 \rangle \langle 0,3 \rangle$	R4 	$\langle 3,1 \rangle \langle 0,2 \rangle$
5	$\langle 3,1 \rangle \langle 0,2 \rangle$	R1 	$\langle 1,1 \rangle \langle 2,2 \rangle$
6	$\langle 1,1 \rangle \langle 2,2 \rangle$	R3 	$\langle 2,2 \rangle \langle 1,1 \rangle$
7	$\langle 2,2 \rangle \langle 1,1 \rangle$	R1 	$\langle 0,2 \rangle \langle 3,1 \rangle$
8	$\langle 0,2 \rangle \langle 3,1 \rangle$	R4 	$\langle 0,3 \rangle \langle 3,0 \rangle$
9	$\langle 0,3 \rangle \langle 3,0 \rangle$	R5 	$\langle 0,1 \rangle \langle 3,2 \rangle$
10	$\langle 0,1 \rangle \langle 3,2 \rangle$	R4 	$\langle 0,2 \rangle \langle 3,1 \rangle$
11	$\langle 0,2 \rangle \langle 3,1 \rangle$	R5 	$\langle 0,0 \rangle \langle 3,3 \rangle$ The Goal state

- **Path Cost** =11

