

Artificial Intelligence 5M - Loch Lomond Lake

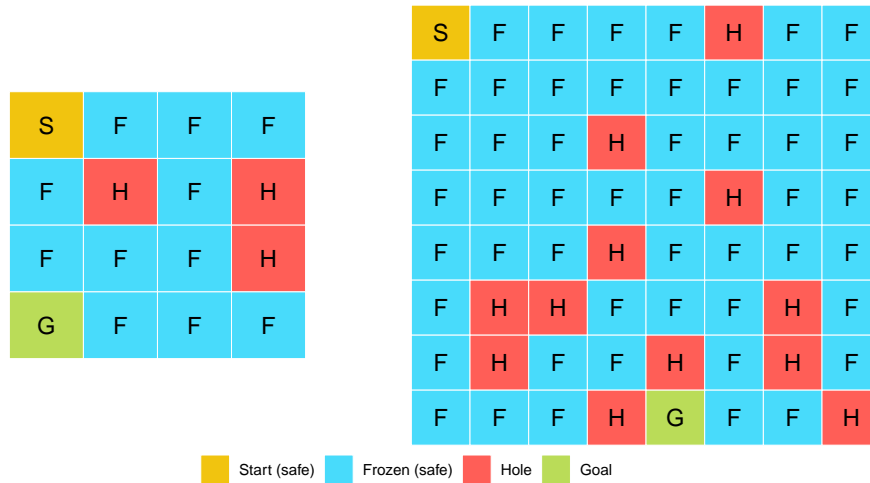
Mayra A. Valdes Ibarra - 2419105v

1 Introduction

The Loch Lomond Frozen Lake environment is a customized Open AI Gym derived from FrozenLake (https://gym.openai.com/envs/#toy_text).

The goal of this report is to design, implement and evaluate three different virtual agents which are able to navigate across the Loch Lomond Frozen Lake grid and retrieve the frisbee disc. Three different agents are analyzed: a senseless agent, a simple agent and a reinforcement agent.

2 Environment



3 Agents

3.1 Senseless Agent

3.1.1 Evaluation

3.2 Simple Agent

3.2.1 Evaluation

3.3 Reinforcement Learning Agent

3.3.1 Evaluation

4 Conclusions

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F	F	F	H	F	F	F	F
F	H	H	F	F	F	H	F
F	H	F	F	H	F	H	F
F	F	F	H	G	F	F	H

8x8 Grid Problem 0

0.003	0.003	0.004	0.004	0.005	-0.05	0.01	0.01
0.003	0.003	0.003	0.004	0.006	0.008	0.011	0.012
0.002	0.001	0	-0.05	0.006	0.009	0.014	0.014
0.001	0	-0.003	-0.018	0.004	-0.05	0.018	0.017
0.001	-0.002	-0.01	-0.05	0.024	0.04	0.025	0.02
0.001	-0.05	-0.05	-0.013	0.03	0.074	-0.05	0.005
0	-0.05	-0.031	-0.029	-0.05	0.186	-0.05	-0.013
0	-0.011	-0.021	-0.05	1	0.599	0.118	-0.05

8x8 Problem 0 – Utilities Table

H	>	>	>	<	H	>	>
v	^	^	^	>	v	>	v
^	^	<	H	>	^	>	v
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<	H	H	v	^	<	H	>
<	H	v	<	H	<	H	^
<	v	<	H	<NA>	G	<NA>	H

8x8 Grid Problem 1

H	>	>	>	<	H	>	>
v	^	^	^	>	v	>	v
^	^	<	H	>	^	>	v
<	^	^	^	<	H	>	v
<	^	^	H	>	v	^	^
<	H	H	v	^	<	H	>
<	H	v	<	H	<	H	^
<	v	<	H	<NA>	G	<NA>	H

8x8 Grid Problem 1