Planning and Aproximate Reasoning: Robot Chef Task

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1 Introduction

Planning an effective work schedule in sectors like catering or the restaurant industry, where numerous tasks must be carried out quickly and efficiently, can be essential to achieving final objectives optimally.

In this work, we will focus on the design and implementation of a planner in PDDL (Planning Domain Definition Language) to modelate how a robot performs tasks equivalent to those carried out by waiters and cooks in an Asian food restaurant. Specifically, a total of three problems will be presented along with their respective domains, and an analysis will be conducted on how optimal solutions are obtained in each scenario in order to meet the objectives set for each of the three problems.

2 Analysis of the problem

2.1 Basic problem

Predicates used:

- (robot-at ?r - robot ?*loc* - location): Representes the localitation of a specific robot 'r', in an area of the kitchen 'loc'.

- (ingredient-at ?ingredient - ingredient ?loc - location): This predicate signifies the presence of an 'ingridient' in an area 'loc'.

- (tool-at ?tool - tool ?loc - location): This predicate indicates that the instrument 'tool' is in the area of the kitchen 'loc'.

- (ingredient-prepared ?ingredient - ingredient): This predicate indicates that the finished item of food 'dish' has been successfully assembled.

- (dish-assembled ?dish - dish): ??

- (dish-plated ?dish - dish ?loc - location): It denotes that the instrument 'tool' is clean.

- (tool-clean ?tool - tool): This predicaate denotes that the robot 'r' is holding the ingridient 'ingridient'.

- (holding ?r - robot ?item - item): This predicate represents that the robot 'r' is holding 'item', it can be a tool or an ingredient.

- (adjacent ?loc1 - location ?loc2 - location): Comprobation if the areas of the kitchen 'loc1' and 'loc2' are adjacent.

- (used-in ?ingredient - ingredient ?dish - dish): This predicates represents if the item 'ingrdient' has been used to prepare the recipe 'dish'.

3 Results

4 Discusion

5 Conclusion

Hola [1]

References

[1] Fu Chang, Chin-Chin Lin, and Chi-Jen Lu. Adaptive prototype learning algorithms: Theoretical and experimental studies. Journal of Machine Learning Research, 7:2125–2148, 2006.