UDACITY

PROJECT

# Implement a Planning Search

A part of the Artificial Intelligence Nanodegree and Specializations Program

PROJECT REVIEW

CODE REVIEW

NOTES

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## Meets Specifications

Brilliant report and keep up with the good work

### Planning Problem Representation

The problems and class methods in the `my_air_cargo_problems.py` module are correctly represented.

```
**********************************************************************
                        Test Result Summary
**********************************************************************

air_cargo_p1 returns the correct initial fluents:                    .
air_cargo_p1 returns the correct goal fluents:                       .
air_cargo_p1 returns an object of type problem:                      .
air_cargo_p1 returns the correct initial values:                     .
air_cargo_p2 returns the correct initial fluents:                    .
air_cargo_p2 returns the correct goal fluents:                       .
air_cargo_p2 returns an object of type problem:                      .
air_cargo_p2 returns the correct initial values:                     .
air_cargo_p3 returns the correct initial fluents:                    .
air_cargo_p3 returns the correct goal fluents:                       .
air_cargo_p3 returns an object of type problem:                      .
```

```
air_cargo_p3 returns the correct initial values:                        .
AirCargoProblem correctly lists possible actions in a given state:      .
AirCargoProblem correctly constructs all possible actions:              .
AirCargoProblem correctly updates state for a given action:             .
AirCargoProblem yields a correct solution when input to breadth_first: .

----------------------------------------------------------------------
            . - Test Passed    F - Test Failed    E - Error
```

**An optimal sequence of actions is identified for each problem in the written report.**

By reading through the written report (heuristic_analysis.pdf), an optimal sequence of actions for problems 1,2 and 3 is clearly outlined. This conforms perfectly with the specifications requirements of this project rubric

## Automated Heuristics

**Automated heuristics "ignore-preconditions" and "level-sum" (planning graph) are correctly implemented.**

```
**********************************************************************
                          Test Result Summary
**********************************************************************

AirCargoProblem implements the ignore preconditions heuristic:         .
Action levels have the correct number of actions:                       .
Literal levels have the correct number of literals:                     .
competing_needs_mutex behaves correctly:                                .
inconsistent_effects_mutex behaves correctly:                           .
inconsistent_support_mutex behaves correctly:                           .
interference_mutex behaves correctly:                                   .
negation_mutex behaves correctly:                                       .
Serialization of mutexes is correct:                                    .
levelsum heuristic behaves correctly:                                   .

----------------------------------------------------------------------
            . - Test Passed    F - Test Failed    E - Error
```

## Performance Comparison

**At least three uninformed planning algorithms (including breadth- and depth-first search) are compared on all three problems, and at least two automatic heuristics are used with A* search for planning on all three problems including "ignore-preconditions" and "level-sum" from the Planning Graph.**

Good work! The report compares three uninformed planning algorithms on all the problems.
It also includes automatic heuristics (ignore-preconditions and level-sum) thereby meeting the specification of this rubric.

**A brief report lists (using a table and any appropriate visualizations) and verbally describes the performance of the algorithms on the problems compared, including the optimality of the solutions, time elapsed, and the number of node expansions required.**

The report provides tables which show the performance of the algorithms, well done.

**The report explains the reason for the observed results using at least one appropriate justification from the video lessons or from outside resources (e.g., Norvig and Russell's textbook).**

Good work summarizing the performance of the heuristics in the report

## Research Review

**The report includes a summary of at least three key developments in the field of AI planning and search.**

Well done

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