

Automatic Planning - Lab 1

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1.1

We decided to use five types to represent the different entities in the domain. Those types were crate, content, uav, location and person. We decided to define two constants of type content - food and medicine. We implemented the actions pickup, flyto and drop. The predicates that we defined were needs, has, at, and free. We reasoned that the predicate needs probably was not necessary to find solutions, but using needs as a predicate for the action drop could prune the search space from solutions that were not of interest. Running ff on each problem with the above mentioned domain went well and no major problem was encountered.

1.2

Our findings when increasing the number of crates and people are that the number of crates will have a more significant impact on the runtime than the number of people. Increasing the number of people and crates jointly seemed to have a positive impact on the runtime compared to increasing the number of crates with a constant number of people. This can be seen when comparing the runtimes in table 2 to the ones in table 3.

Table 1: Results for task 1.2.1

Planner	UAV	Locations	Persons	Crates	Goals	Time
IPP	1	1	1	1	2	0.00
IPP	1	2	2	3	4	0.00

Table 2: Results for IPP while varying number of crates

Planner	UAV	Locations	Persons	Crates	Goals	Time
IPP	1	10	3	10	4	0.5
IPP	1	10	3	20	4	1.3
IPP	1	10	3	30	4	49.0
IPP	1	10	3	40	4	168.4

Table 3: Results for IPP while varying number of persons and crates

Planner	UAV	Locations	Persons	Crates	Goals	Time
IPP	1	10	20	20	4	1.4
IPP	1	10	25	25	4	4.3
IPP	1	10	35	35	4	22.6
IPP	1	10	45	45	4	111.4

1.3

See table 4 and 5 for the results of this section.

Table 4: Results using the largest problem file with 2014 planners

Planner	UAV	Locations	Persons	Crates	Goals	Time	Steps
IPP	1	10	45	45	4	111.4	9
madagascar-p	1	10	45	45	4	17.29	10
yahsp3	1	10	45	45	4	0.06	12
freelunch	1	10	45	45	4	1.1	10

Table 5: Largest configuration that cannot be solved with 2014 planners in less than a minute

Planner	UAV	Locations	Persons	Crates	Goals
madagascar-p	1	10	70	70	4
yahsp3	1	90	90	90	4
freelunch	1	80	80	80	4