HW4 Write-Up

What wikiHow article did you pick and why?

We picked How to Survive on a Deserted Island With Nothing because the article is interesting and many parts of it have specific steps that can be translated into PDDL easily.

What portions of the article did you select to translate to PDDL?

We chose Create a shelter in Part 2, Preparing meat, and Consider building a raft in Part 3.

Give some examples of the actions, types, and predicates you used in your domain.

Examples of actions: 1. Build roof: the npc builds the roof for the shelter, which requires the npc to have logs; 2. Complete shelter: the npc completes the shelter, which requires that there are roof, walls and beds; 3. Prepare animal: the npc prepares the animal before eating, which requires a sharp stone and a hunted animal.
Examples of types: 1. Sharp stone: a sharp stone, a subtype of item, that can be used to hunt and prepare animals; 2. Leaves: leaves that can be used to build bed; 3. Wall: walls of shelters that made of logs and small sticks.
Examples of predicates: 1. at: an object is at the location; 2. inventory: an item is in the player's possession; 3. treated: an animal has been treated and is safe to eat.

Explain what goal you selected for your problem, and give the inital state and solution that you created.

Problem	Create a shelter	Prepare meat	Build a raft
Goal	Create a shelter to rest and recover	Hunt and prepare animals so that they are safe to eat	A finished raft in the inventory
Initial State	Player at the beach	Player at the beach	Player at the beach
Solution	1. Go north to root of the tree 2. Go north to jungle	1. Go north to root of the tree 2. Go north to jungle	1. Go north to roo of the tree 2. Go north to jungle

	3. Get small sticks 4. Get logs 5. Go south to root of the tree 6. Climb up to the top of the tree 7. Get leaves 8. Go down to root of the tree 9. Build roof using logs 10. Build walls using small sticks 11. Build bed using leaves 12. Complete the shelter with roof, walls and bed	3. Go east to hills 4. Get sharp stones 5. Go west to jungle 6. Hnt animals with sharp stones 7. Prepare animals with sharp stones	3. Go east to jungle hills 4. From hills get wines 5. Go west to jungle 6. From jungle get logs 7. Go south to root of tree 8. Go south to beach 9. Build raft 10. Test raft

What limitations of PDDL did you encounter that makes it difficult to precisely convert a wikiHow description into PDDL?

PDDL requires very formulated variable names and action names, which comes in various forms in the wikiHow article (e.g. different ways of saying “combine” might exist in the same article). The unstandardized data could be hard to directly convert to a very standardized language like PDDL.

Could your PDDL be used as an interesting challenge for a text-adventure-style game? If so, how? If not, what would be needed to create an interesting challenge?

No. I think more blocking and precondition checks are required. For now the whole challenge takes place in very few places and the player can get around fairly easily. This heavily limits the complexity of the game. An interesting and challenging game should also reward the player more than we did here. In fact, along the way that a player solves a challenge, adding rewards would make them less easily drop out.

Discuss how you might use GPT-3 to automatically or semi-automatically convert a wikiHow article to PDDL?

A good way to use GPT-3 to automatically convert wikiHow article to PDDL is: first detect all the noun phrases and verb phrase in the wikiHow article; then GPT-3 is used as a way to connect those phrases together into either actions or domain information, depending on the verb phrase. Finally, one of the noun

phrases or verb phrases towards the end would be drawn as the goal to be solved. It would be important to check if it’s reachable via some test round.