

Constraint: Starting from a patch of loose, sandy ground, a hiker needs to reach a paved, stable area. The hiker is wearing sturdy boots and can traverse the loose ground, but it is uneven and may shift underfoot. The paved area is firm and predictable. The hiker must avoid any dense vegetation or trees, as they could hide obstacles or cause tripping.

Task1: Textual Constraint Understanding

Q: How should the **traversability and costs** of different land types be assigned to ensure safest path?

A: **Traversability Vector** : [1, 1, 1, 1, 0, 0, 1, 0]

Preference Vector : [1, 2, 5, 4, 0, 0, 3, 0]

Task2: Text-Image Constraint Alignment

Q: Integrating the **numbered regions** in the image with the specified constraints, what are the **traversability status and priority rankings** for each land cover type?

A: **Region Vector** : [7, 1, 4, 6, 2, 3, 5, 0]

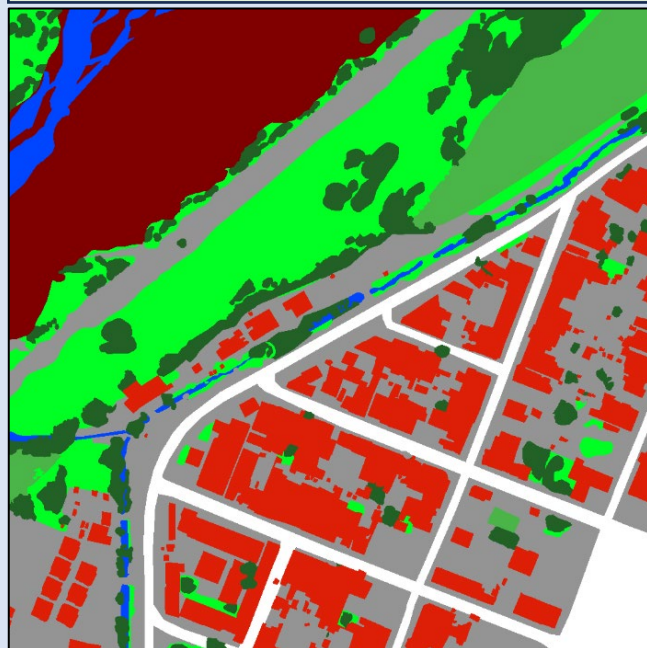
Traversability Vector : [1, 1, 1, 1, 0, 0, 1, 0]

Preference Vector : [1, 2, 5, 4, 0, 0, 3, 0]

Task3: Constrained Route Planning

Q: Starting point with a magenta circle is at [257, 190]. Ending point with a cyan circle is at [765, 1002]. What is the **safest optimal path** for the hiker to take?

A: **Route Path** [[257 190], [262 195], [271 204], [273 206], [280 213],....., [736 976], [764 1002], [765 1002]].



Legend ■ Bareland(ID:0) ■ Rangeland(ID:1) ■ Developed space(ID:2) ■ Road(ID:3) ■ Tree(ID:4) ■ Water(ID:5) ■ Agriculture land(ID:6) ■ Building(ID:7)