

# a search problem in NetLogo

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## brief

Using NetLogo code samples as a starting point, build a model to demonstrate A\* searching in NetLogo.

## outline

Write a model which demonstrates the use of search. Allow users to specify start states, goal states and an environment containing obstacles (and later also containing cost gradients). Where possible, build the model so it shows what is happening during search (perhaps by marking patches as they are found and then explored) and gives users the option of applying different types of search.

The hill diffusion model will help you build an environment initially with obstacles and later with hill gradients. The height of these hills can be later be used as costs for patches and also (if you want to introduce a time factor) as a measure which affects the time it takes for a turtle to move over a patch.

The code from the hill diffusion model uses the mouse to mark patches – something which is not difficult in NetLogo. Check out the code for handling the mouse if you want to do something similar for marking start & goal positions.

The search mechanism is not accompanied by any typical model – it has no graphic and can only be run by either (i) testing it from the observer window or (ii) incorporating it into some other model. You should use the search in your model but rewrite the legal move generator and other utils functions as necessary.

## *summary of resources*

Check the section titled “additional resources for modellers” in the NetLogo pages of [www.agent-domain.org](http://www.agent-domain.org) for the following...

1. breadth-search(1a).nlogo – a generalised search routine that can perform as breadth-first, best-first, etc. Read the info tab of the model for an explanation & some examples;
2. hill-diffusion.nlogo – a simple example systems which helps set up environments with hills/cost gradients;