Domain Description

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// A boolean version of the wildfire fighting domain.



// In a general wildfire scenario, its spread is mostly determined by

// the weather (i.e. wind), terrain slope, and fuel type (i.e. grass, wood).

// In this scenario, a map is represented with grids, size of n\*n.

// Each grid has some attributes, including fuel type, terrain elevation.

// Furthermore, the fuel type and terrain elevation will affect the fire

// spreading speed. Some fuel type is more easily on fire than other,

// and higher grids are always easier to catch fire. Cell features and

// effects of wind are not modeled in this simplified version.

//

// In this version, whether a cell would be on fire is determined by its

// neighbor grids, and the fire spreading law is simplified with this function

//

// p(burning(xi, yj)=true) = 1 / (1 + exp(4.5 - k))

//

// where k is the number of neighbors on fire.

//

// The decision task to a emergency manager is to control the fire

// and keep it away from important targets.

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General reference:

Karafyllidis, I., & Thanailakis, A. (1997).

A model for predicting forest fire spreading using

gridular automata.

Ecological Modelling, 99(1), 87-97.

http://www.dpi.inpe.br/gilberto/cursos/st-societ

2013/Kara1997.pdf

Implementation Reference:

Scott Sanner (2010). Relational Dynamic Influence Diagram Language (RDDL):

Language Description.

<http://users.cecs.anu.edu.au/~ssanner/IPPC_2011/RDDL.pdf>

Github: <https://github.com/ssanner/rddlsim/tree/master/files/final_comp_2014/rddl>