
ANTHONY BONATO, Ryerson University
Seepage as a model of counter-terrorism

Seepage is a vertex-pursuit game played on directed acyclic graphs (or dags). Nowakowski et al. introduced *Seepage* as a mixture of firefighting and graph searching, inspired by efforts to stem the lava flow from the Eldfell volcano in Iceland. One player (*sludge*) moves from a source towards a sink in the dag, while the other player (*greens*) attempts to prevent the sludge from reaching a sink by protecting nodes. The *green number* of a dag is the minimum number of greens needed to stop the sludge from reaching a sink. We consider applications of *Seepage* to networks interdiction and the modelling of terrorist networks. Nodes of the network are viewed as members of a terrorist cell, and agents neutralize selected nodes in an attempt to disrupt messages moving from the cell's leader to one of its foot soldiers. A stochastic model is introduced which generates dags with a prescribed degree sequence. We play a variant of *Seepage* on the model, and contrast results on the green number in the case of a constant versus a power law degree sequence.