Homework V Pathfinding

# Due Dates: 10/30/16, 10pm (Submission on blackboard)

# Points: 15

# Assignment Type: Groups of 2 or 3 people

# http://movingai.com/benchmarks/dao/den207d.jpg

# Introduction

In this assignment, you will practice the A\* algorithms for pathfinding using two maps from dragon age. The definition of the map is attached as a separate file for this homework. The meanings of the symbols in the map are:

* . - passable terrain
* @ - out of bounds
* T - trees (unpassable)

# Requirements

* Create a tile representation of the map
  + Each title should contain more than one “.”
* Create a waypoint representation of the map
  + You can either do this automatically, e.g. corner point, or manually
* Implement A\* to work with both the tile representation and the waypoint representation of the map
* Create a GUI which can support the following functions:
* Toggle between the two world representations
  + When using the tile representations, show the titles and their centers
  + When using waypoints, show the waypoints
* Change the weight of heuristics in A\*
* Change the heuristics in A\*
  + You need to implement at least 2 heuristics
* Allows the user to choose any point on the map as the start or end point of pathfinding
  + You may implement either a mouse or keyboard control
* As A\* runs, color the nodes being explored while the algorithm is running
* You need to draw the final path on the map after A\* finishes
* As usual, additional points are available:
  + 2 points if you try another way of representing the map, e.g. quad tree
  + 2 points if you allow the user to create and delete additional obstacles in run time
    - you only need to make this work with the tile representation
* A separate readme file is required for explaining your code, how to run it, the major functions in it, etc.