Review

IMGD 4000

Engine Architecture Types

- Broadly, what are the two architecture types discussed for game engines?

- What are the differences?

Pathfinding with Waypoints

- What is one potential problem with pathfinding using waypoints?

- What is a potential fix to the problem above?

Pathfinding with Waypoints

- What is one potential problem with pathfinding using waypoints?
    Ans: blind spots, waypoint generation, kinky paths

- What is a potential fix to the problem above?
    Ans: fine-grained graphs, flood fill, path smoothing

Pathfinding with a NavMesh

- Is a Navmesh a replacement for A*? Why or why not?

Pathfinding with a NavMesh

- Is a Navmesh a replacement for A*? Why or why not?
    Ans: No. A Navmesh is a replacement for a waypoint graph. Instead of points, the graph nodes are polygons, covering the walkable area. A* can still be used to chart the path.

Tuning Pathfinding

- Sketch you how might you "time slice" to limit the CPU load of pathfinding

Tuning Pathfinding

- Sketch you how might you "time slice" to limit the CPU load of pathfinding

  Ans: Divide search algorithm into "cycles" (e.g., one ply). Create a PathPlanner that stores progress along path and registers search with game engine (Path Manager). Object requests path to destination with PathPlanner. Create a PathManager that allocates out "cycles" to registered PathPlanners. Game engine (PathManager) allows for fixed number of cycles per tick.

Camera Control

- Related to advanced camera control:
  – What is "zoning"?
  – What are "dynamics"?
  – What is "blending"?
  – What are "rails"?

Camera Control

- Describe the design of a camera zoning approach.

- How can you design camera dynamics not to move the camera with every movement of the player?

Camera Control

- What is blending?

- As part of blending, what is ease?

Basic Game AI

- What is a *decision tree*?

- What are strengths vs. weaknesses?

- What is a *hierarchical finite state machine*? Why use it versus a "flat" state machine?

- Where is the "knowledge" in the above? How else might we approach AI? Examples?

3/31/2016

Autonomous Movement

- What are the three *main* components of the "steering" model? What does each do?

Autonomous Movement

- What are the three *main* components of the "steering" model? What does each do?
  Ans:
  Action Selection – chose goals and plans
  Steering – Calculate trajectories, apply forces
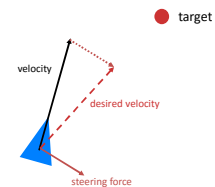 Locomotion – apply mechanics of motion

Steering force for Seek

- Given a vehicle with mass and velocity and a target, describe how "seek" works

Steering force for Seek

- Given a vehicle with mass and velocity and a target, describe how "seek" works
  Ans:

  target

  velocity

  desired velocity

  steering force

Combining Forces

- What is the blended approach to combining steering forces?

- What is the prioritized approach to combining steering forces?

Combining Forces

- What is the blended approach to combining steering forces?
  Ans: All steering forces are called, with weights providing balance

- What is the prioritized approach to combining steering forces?
  Ans: Steering forces are prioritized, called in order until one or max force is reached