### 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?

**Ans:**
- blind spots, waypoint generation, kinky paths
- fine-grained graphs, flood fill, path smoothing

### 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

   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?
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

   Ans:

Combining Forces

• What is the blended approach to combining steering forces?

• What is the prioritized approach to combining steering forces?

   Ans: Steering forces are prioritized, called in order until one or max force is reached