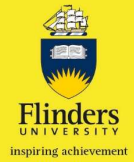# COMP3752 Computer Game Development

Procedurally Generated Content

Peter Mitchell

Topics Today

- Infinite Backgrounds
- Camera Following the Player
- Procedural Generated Content
- Dungeon/Roguelike Example
  - Room/Corridor Creation, and Poisson Disk Sampling
- Platformer Example
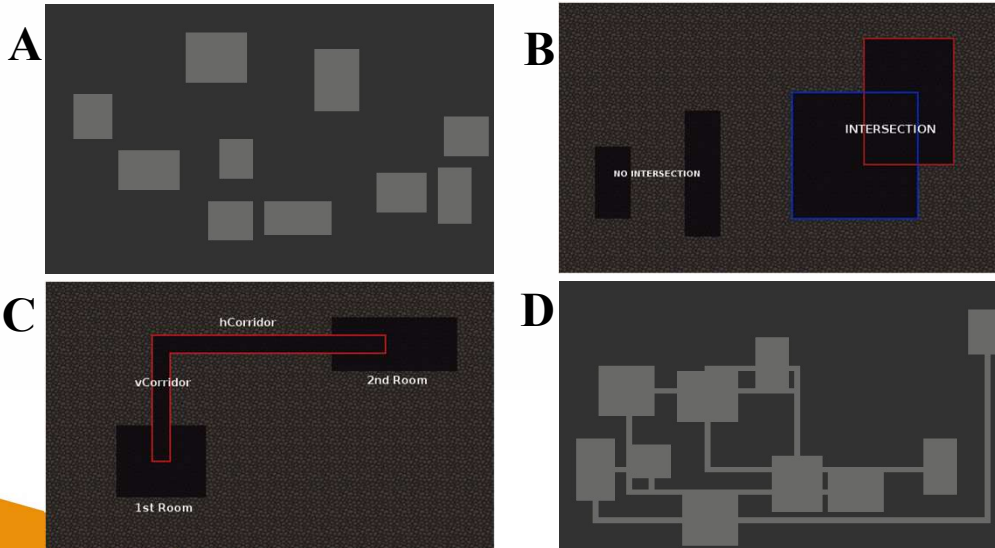 - Linear Random Rooms, Guided Solution Pathing

Procedural Generated Content

- Follows set of procedures and rules to generate content fitting a theme.
- Important to select appropriate algorithms.
- Not one size fits all, and often using Procedurally Generated Content will over complicate development.

Dungeon/Roguelike Procedure

1. Populate Rooms
2. Surround with Walls
3. Create Map with Tiles
4. Generate Poisson Disk Sampling
5. Filter Poisson Data to Match Only Rooms.
6. Spawn (Random) Objects
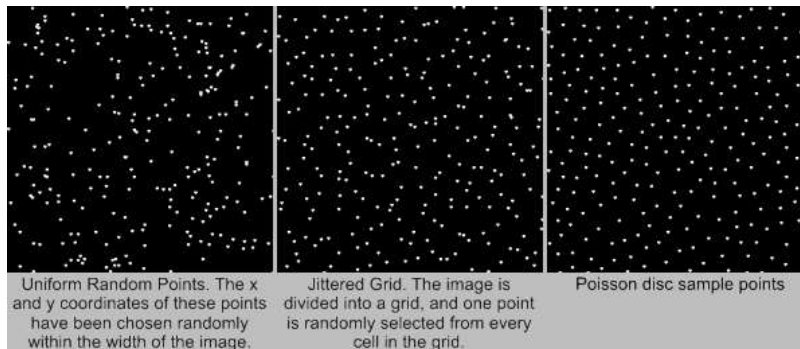7. Determine Player Start Location

Dungeon/Roguelike Example: Map Creation

A

B

INTERSECTION

NO INTERSECTION

C

hCorridor

vCorridor

2nd Room

1st Room

D

Flinders
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inspiring achievement

Randomised Distributions

Uniform Random Points. The x and y coordinates of these points have been chosen randomly within the width of the image.

Jittered Grid. The image is divided into a grid, and one point is randomly selected from every cell in the grid.
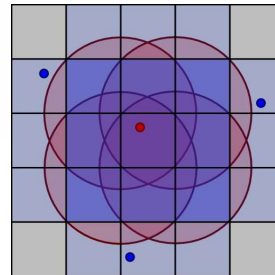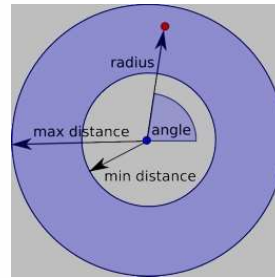
Poisson disc sample points

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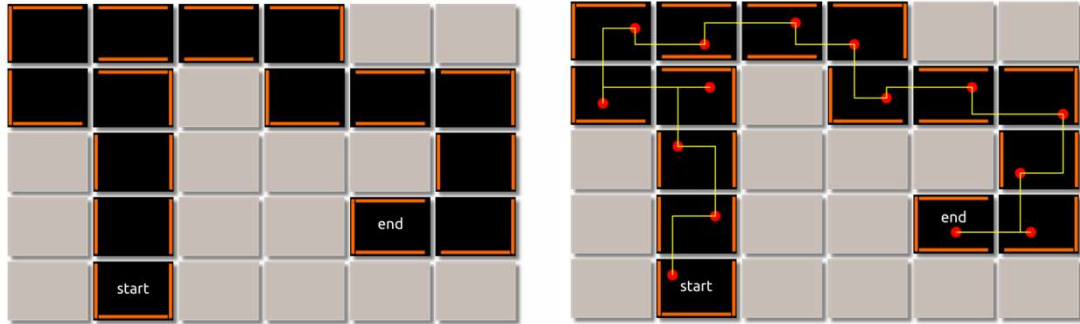
Poisson Disk Sampling

- Generate Sample Point:

- Check neighbours for conflicts:

Platformer Procedure

1. Populate Rooms
2. Create Base Map (Room/Level Boundaries)
3. Create Solution Path
4. Create Extra Platforms (not implemented)
5. Spawn Platforms
6. Spawn Objects
7. Determine Player Start Location

Platformer Level Layout

Any Questions?

- Further reading with references to all the base algorithms used are in the ReadMe file with the Unity project.
- Welcome to send me a message if you have any questions about the content. Time permitting, I may give suggestions or suggest sources to look at.