Doom Game Engine
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- ViZDoom API (python, Java, Lua)
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- Extremely fast: up to 7000 FPS
- Synchronous
- Flexible
  - Modify behavior of bots
  - Place/remove objects at any location
  - Random mazes
  - Random textures
Doom: Applications
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- Navigation: https://youtu.be/8ljAT-tEG-E
Doom: Applications

• Playing deathmatches: https://youtu.be/oo0TraGu6QY
Doom: Applications

• Task-oriented language grounding: https://youtu.be/JziCKsLrudE
Doom: Applications

• Localization: https://youtu.be/rdhKu8GqVLw
Doom Game Editor: Slade
script "set_position" (int x, int y, int angle){
   //print(s:"Received ",f:x,s:" ",f:y,s:" ",f:angle);
   int o = 0.0;
   if (angle == 0){
      o = 1.0;
   } else if (angle == 1){
      o = 0.25;
   } else if (angle == 2){
      o = 0.5;
   } else if (angle == 3){
      o = 0.75;
   }

   SetActorAngle (0, o);
   SetActorPosition(0, x, y, GetActorZ(0), 1);
}
Unreal Game Engine
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• APIs: Carla, Airsim, Unrealcv
Unreal Game Engine

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• Photo-realistic!
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• Photo-realistic!
• Online Marketplace with plenty of environments
Unreal Applications

• Localization: [https://youtu.be/T5Ezx-QfU0](https://youtu.be/T5Ezx-QfU0)
Unreal Editor

OpenGL ES2
Unreal Blueprints
Trade-off

Doom, Quake (ViZDoom, Deepmind Lab)
SUNCG (HomePlatform, House3D, MINOS)
Unreal/Unity (AI2Thor, Airsim, Carla, Chalet, Unrealcv)

Faster, more flexible

More realistic
What do we want?
What do we want?

Everything!
What do we want?
Everything!
Fast, flexible and realistic
Thank you