

# **Streaming for blender to Unreal Engine with AI**

AI-Enhanced Real-time Pipeline

Open Developer  
Myunggyun Kim



# 1. Problem Statement

Inefficiency in Traditional 3D Workflows

## **Current Workflow Bottleneck:**

- Manual Export/Import: Designers must manually export assets to GLB, FBX, or OBJ formats.
- Context Switching: Constant switching between Blender and Unreal Engine breaks creative flow.
- Repetitive Looping: “Modify in Blender → Export → Reload in Unreal” cycle is tedious and time-consuming.



## 2. Background & Solution

Why Streaming & Generative AI?

### **Concept: Real-time Streaming**

- Direct link between Blender and Unreal Engine eliminates file management overhead.
- “Fast and Clear”: Instant feedback loop for 3D artists.

### **Integration with 3D Generative AI:**

- Integrating AI models directly into the pipeline significantly boosts productivity.
- Automation of asset variation and generation.



## 3. Related Works

### Existing Ecosystems

#### NVIDIA Omniverse:

- Connectors: Links various DCC (Digital Content Creation) tools like Revit, Maya, and Blender to Omniverse.
- Uses USD (Universal Scene Description) as a central interchange format.
- **Our Approach vs. Omniverse:** Focused specifically on lightweight “Blender → Unreal” direct streaming with AI generation integration.



# 4. Proposed Method

System Architecture & Implementation

## System Components:

1. Blender Source (Sender):
  - Developed in Python (Blender API).
  - Handles mesh data extraction and transmission logic.
2. Unreal Engine (Receiver):
  - Custom Mesh Receiver Actor/Component.
  - Reconstructs mesh data in real-time within the game engine.
3. Debugging & Validation:
  - Used PyVista (Python) for intermediate geometry debugging and visualization.
4. AI Generation:
  - Model: Hunyuan 3D 2.
  - Generates 3D meshes based on prompts/inputs directly within the workflow.



## 5. Current Status

Implementation Progress

### Achieved Milestones:

1. Mesh Streaming:
  - Successfully sending raw mesh geometry (Vertices, Indices) from Blender to Unreal.
2. AI Generation in Blender:
  - Integration of Hunyuan 3D 2 to generate mesh geometry directly inside the Blender environment.



# 6. Future Roadmap

Next Steps for Full Integration

## Upcoming Features:

1. Material & Texture Streaming: Support for PBR materials and texture maps (Albedo, Normal, Roughness).
2. Textured AI Generation: Generating full-textured assets, not just grey-box meshes.
3. Skeleton Generation: Auto-rigging and skeleton generation for dynamic assets.
4. Skeletal Mesh Streaming: Support for streaming rigged characters and animations.