

# Unreal Development Offline Task

## 1 Scenario

Your team is seeking to collect a dataset of gameplay videos from the latest **Unreal engine 5.5 Lyra starter game** to train Artificial Intelligence (AI) models. It is supposed that by running your updated Lyra package on a Windows operating system, we could generate a multi-modal view gameplay video (e.g., .mp4 or .avi) where each frame is a grid of four modality views as the below example:

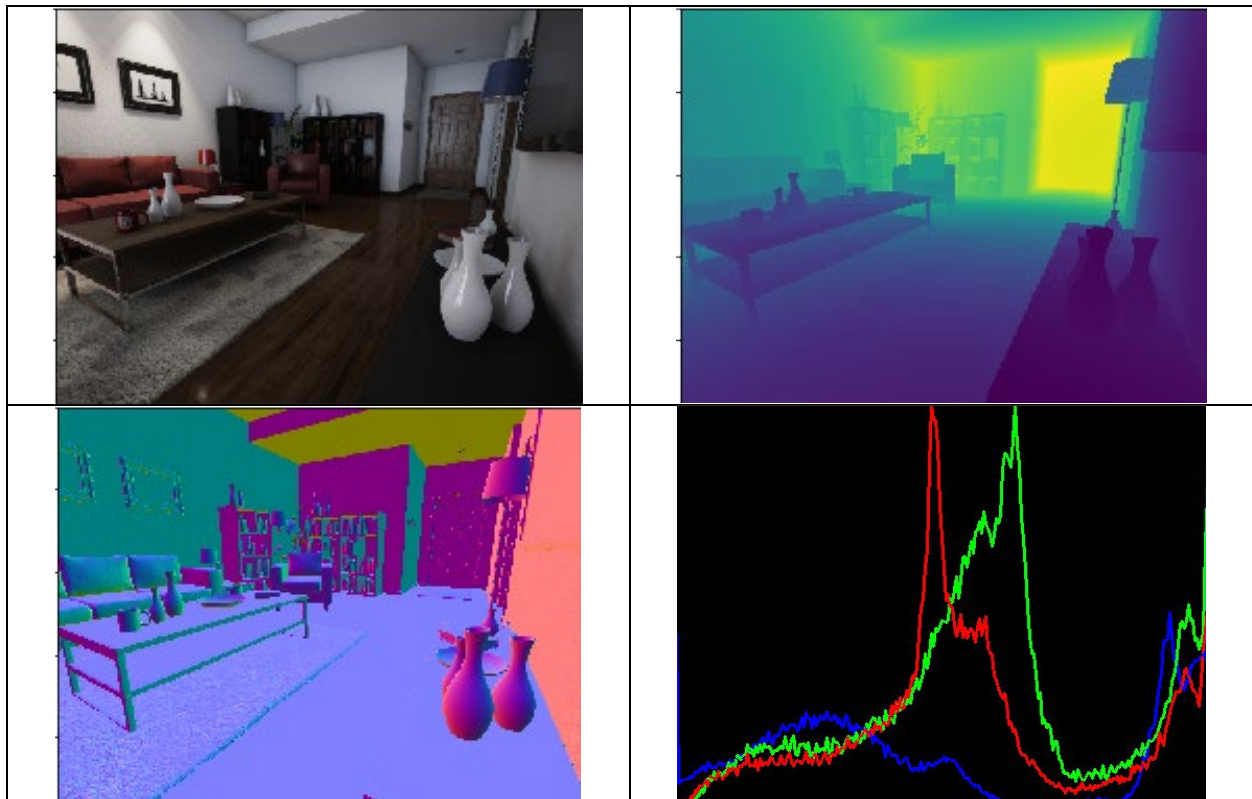


Figure 1: An example for a given frame in the expected video. At the top left, we have RGB modality, at the top right, we have depth modality, at the bottom left, we have surface normal modality, at the bottom right, we have RGB color intensity histogram modality.

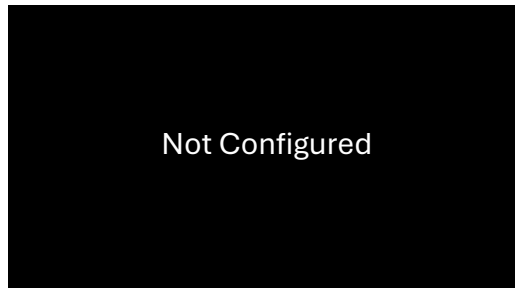
*Hint: for the color intensity histogram generation, you could utilize OpenCV third-part C++ package in the latest Unreal Engine 5.5*

## 2 Requirements

We need you to design your solution as an Unreal Plugin that is configurable through an external .ini file, and package it with Unreal Lyra starter game for Windows. Your plugin configuration should allow the following configs:

- Include\_Depth: (True/False)
- Include\_SurfaceNormal: (True/False)
- Include\_Histogram: (True/False)
- Start\_Capture\_Key: (A keyboard Key)
- Stop\_Capture\_Key: (A keyboard Key)
- Videos\_dir: (An absolute path to the videos saving folder)

In case a modality is not configured to be present, use a blank black view with text “Not Configured” in the middle of it. Example:



We need to control the video capturing functionality using the configured start/stop capturing keyboard keys.

A default use case scenario would be to run your Lyra Windows package, press on the start capturing key, play the game for some time, then press on stop capturing key to export the captured video to the configured video directory. We could have multiple start/stop recording sessions during a single gameplay, thus, you need to have a flexible video naming convention to allow such a feature (e.g., **Lyra\_vid\_[timestamp].mp4**)

### 3 Deliverables

1. Source code for your multi-modal video capturing plugin compatible with Unreal Engine 5.5
2. Windows package for the Lyra starter project with your plugin and its .ini config file.
3. Sample videos generated after your testing.
4. A document summarizing your steps to complete the task with a description of plugin's code components.

### 4 Deadline

This task should be completed within **48 hours** from its reception.