README

This repository demonstrates how to integrate **Large Language Models (LLMs)** with **VRExplorer** to reduce manual effort in **model abstraction** and **dataset analysis** for automated VR application testing. The workflow supports LLM-generated (or manually authored) test plans that can be imported, validated, and executed inside Unity.

Features

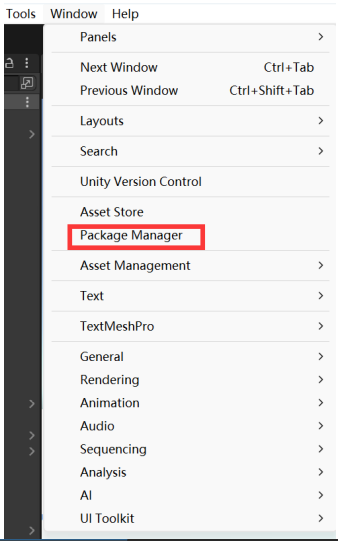
- LLM-assisted test plan generation (with optional RAG support)
- Seamless integration with VRExplorer's testing pipeline
- Automated ID binding and runtime execution via VRAgent
- Reproducible and configurable VR test execution in Unity

Setup

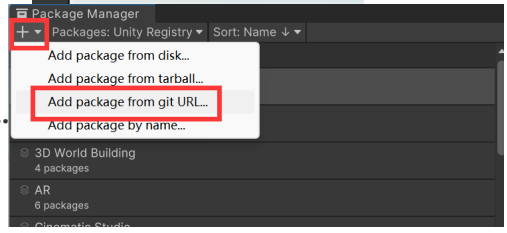
1. Unity Configuration

- Use the **recommended Unity version (2021.3.45f1c2)**
- Add Required Packages via Unity Package Manager. This project depends on the following Unity packages.
  Add them **via Git URL** in **Unity Package Manager**:

  1. Open **Unity Editor**
  2. Go to **Window** → **Package Manager**

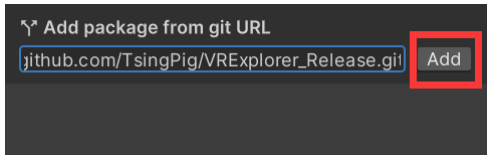


  3. Click `+` → **Add package from git URL...**



  4. Add the following packages:
     - **VRExplorer**

```
https://github.com/TsingPig/VRExplorer_Release.git
```



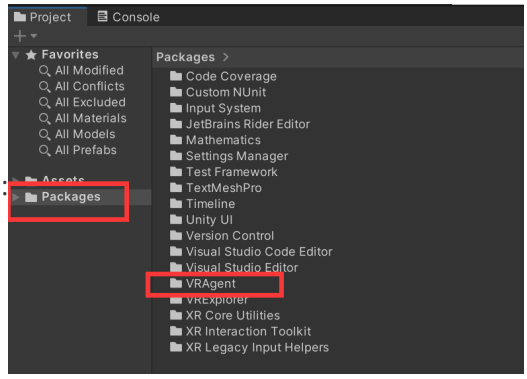
- **VRAgent**

```
https://github.com/TsingPig/VRAgent_Release.git
```

After installation, ensure both packages are successfully loaded without errors.

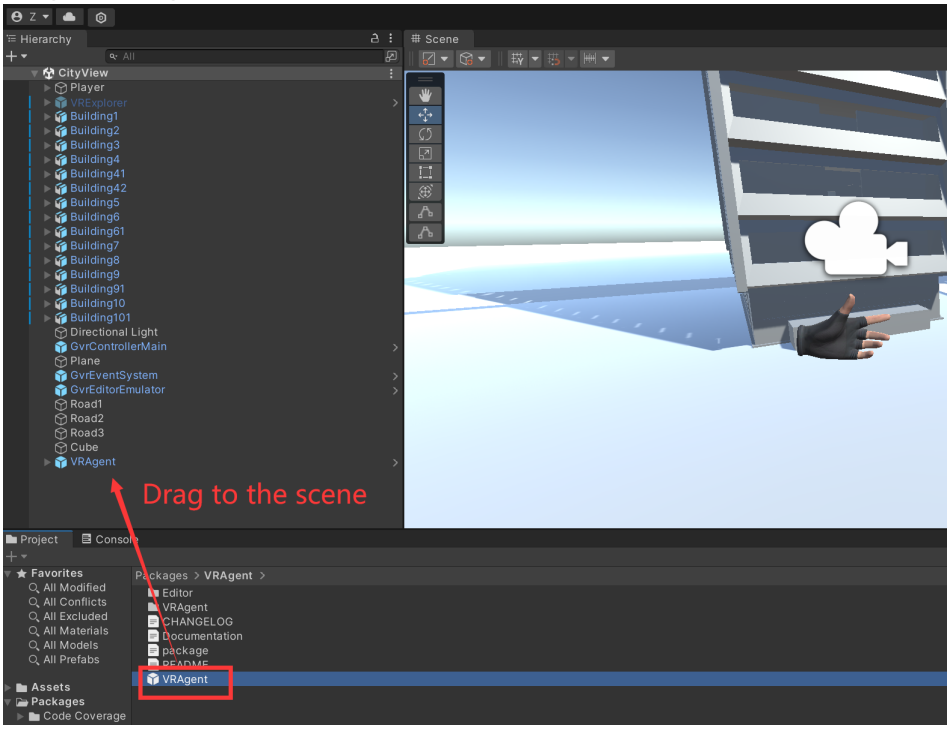
2. Scene Preparation

1. Open or select the **scene to be tested** in Unity.
2. From the **Package** view, navigate to:



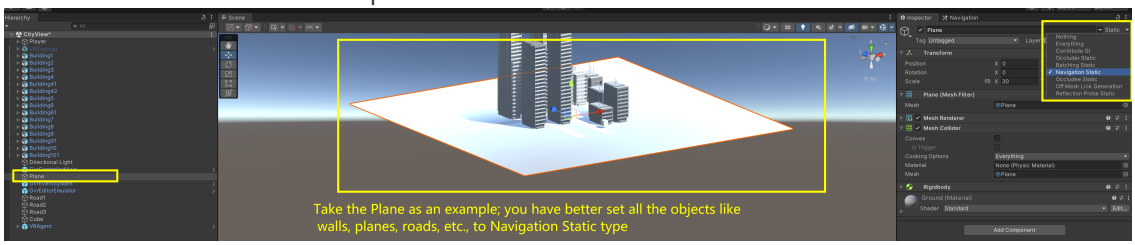

```
Packages → VRAgent
```

3. Drag the **VRAgent Prefab** into the selected scene.



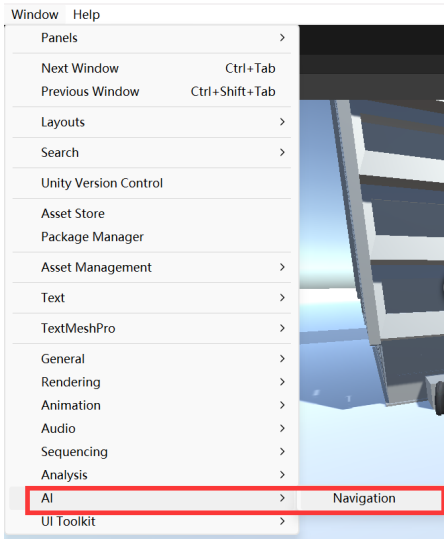
3. Navigation Mesh Baking

1. Select all static environment objects (e.g., walls, floors, obstacles).
2. Mark them as **Static** in the Inspector.

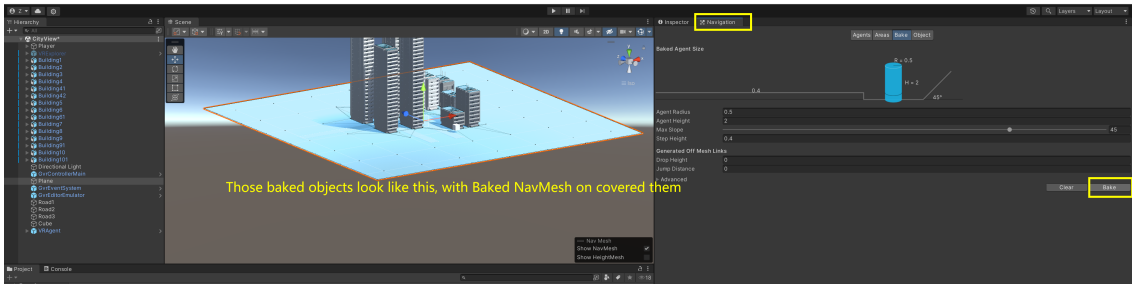


3. Open the Navigation window:

```
Window → AI → Navigation
```



4. Bake the **NavMesh** for the scene.



Usage

1. *[Optional]* Test Plan Generation

Test plans can be prepared using:

- **LLM-based generation** (optionally enhanced with Retrieval-Augmented Generation), or
- **Manual configuration**, following the predefined test plan format.

The generated test plan is expected to be in a structured (e.g., JSON-based) format compatible with VRExplorer.

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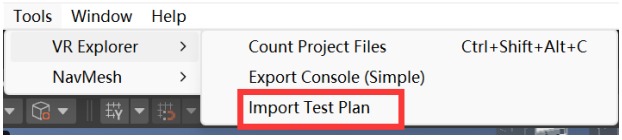
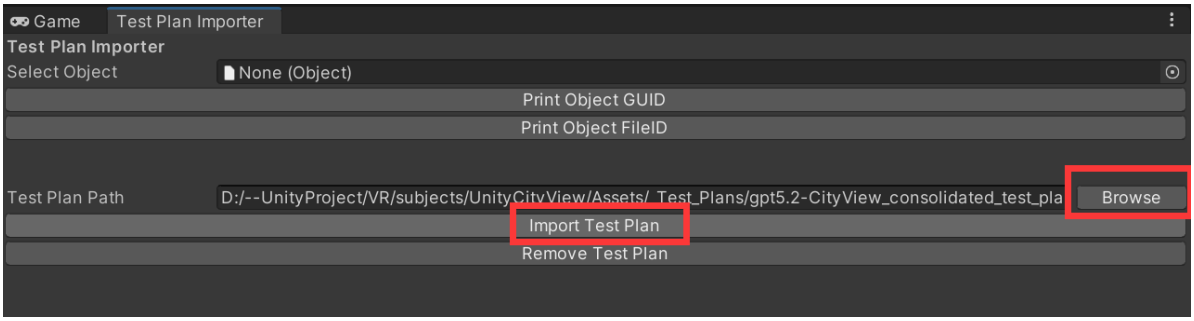
2. Import Test Plan

In the Unity Editor, import the test plan via:

```
Tools → VRExplorer → Import Test Plan → Browse → Import Test Plan
```





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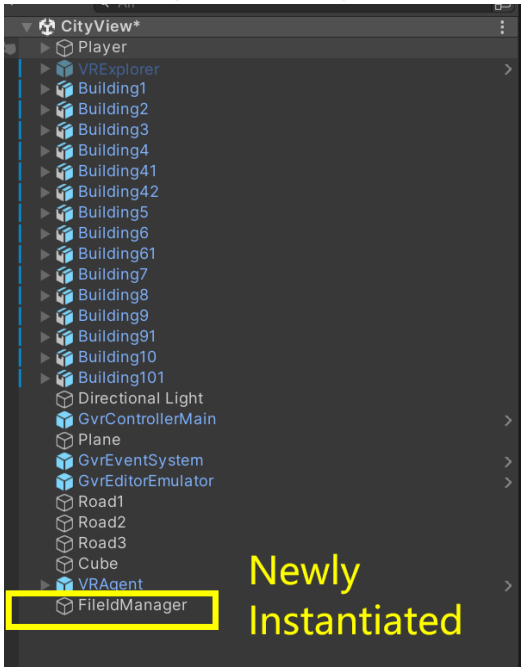
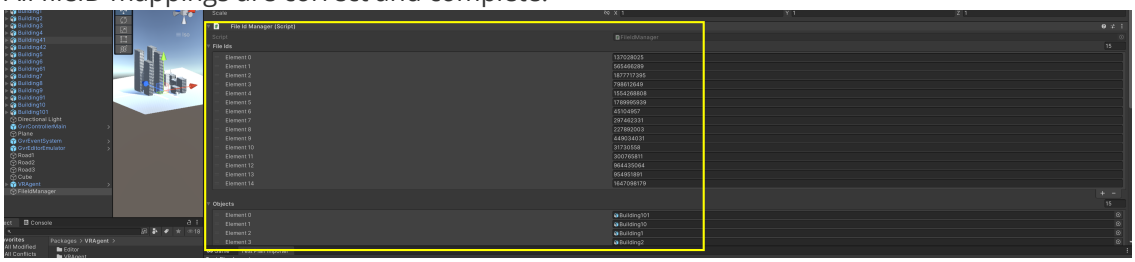
3. Test Plan Validation

Before execution, verify that:

- A **FileIdManager** has been generated in the testing scene.



- All fileID mappings are correct and complete.



[Optional] Code Coverage Recorading

1. Install Unity Code Coverage Package

1. Open **Unity Editor**
2. Go to **Window** → **Package Manager**
3. Enable **Unity Registry**
4. Search for **Code Coverage**
5. Install the **Code Coverage** package provided by Unity

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2. Select Scripts for Coverage Collection

1. Open the Code Coverage window:

   ```
   Window → Analysis → Code Coverage
   ```

2. In the Code Coverage settings:
   - Select the **assemblies or scripts** to be included in coverage recording
   - Exclude unrelated or third-party code if necessary