

# UDMSlua Introduction and Quick Start

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# 1 What Is UDMSlua ?

UDMSlua is an application for designing and visualizing human movement in 3D. UDMSlua was developed with the Unity engine and provides Lua scripting support for creating scenarios.

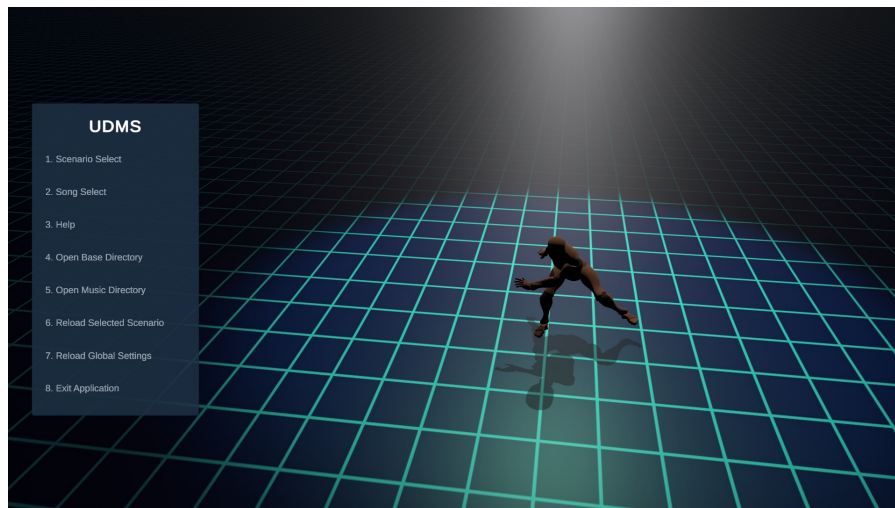
The scenaria programming interface of UDMSlua was designed to give the user maximum design freedom by providing most of the Unity Engine's native scripting API inside the scripts as well as new methods that simplify the creation of dance scenaria. At the same time, it facilitates Lua scripting by supporting the use of many different scripts for each scenario. It also supports some advanced runtime functionality, such as running code snippets or executing commands on selected domains of a scenario. The scripting API is also extensible by supporting user defined libraries.

The UDMSlua distribution contains Lua scripts which implement several categories of dance models that (hopefully) produce interesting and esthetically pleasing results. Some of the included categories are: *epidemic*, *game theoretic* and *logical* dances.

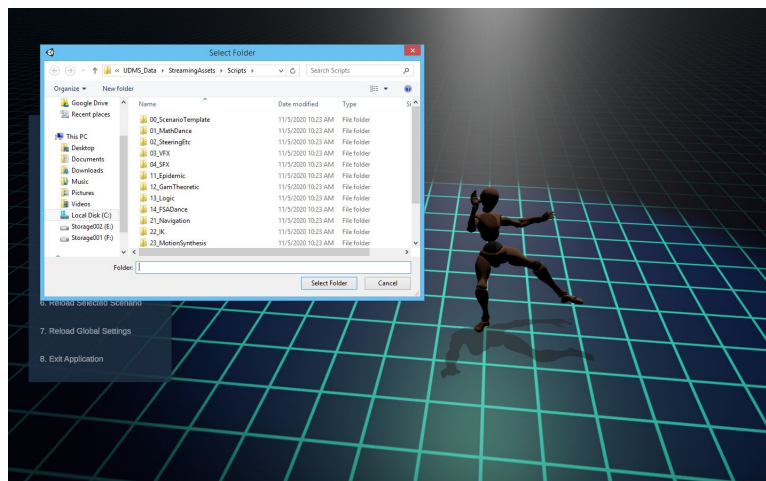
UDMSlua has been created and tested with Unity2019.4.10f1 on Windows (7, 8 and 10). If you want to run it on Linux or Apple computers you will have to re-build the application for these environments. We have not tested this route; we expect most of the UDMSlua functionalities to work, but there are some which are Windows-specific.

## 2 QuickStart

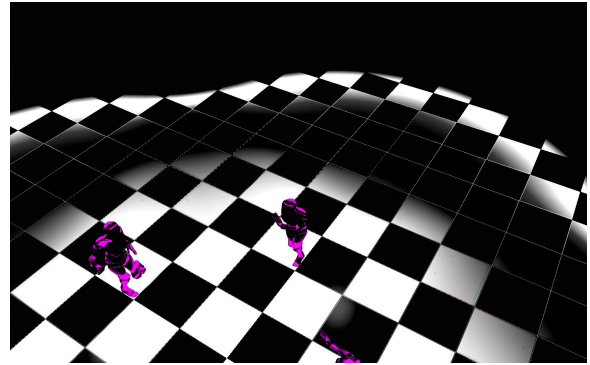
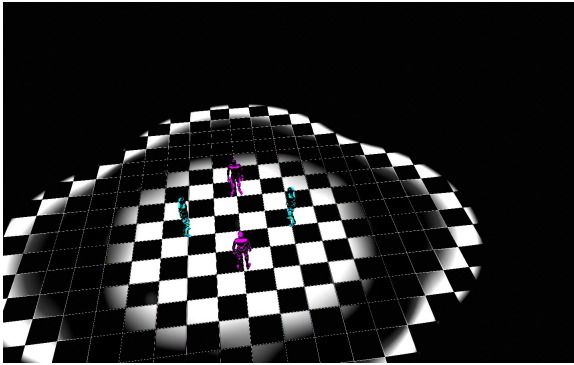
1. Start the application. You see the *Main Menu*, which looks like this.



2. Click on Scenario Select; a file dialog will open and you will see this

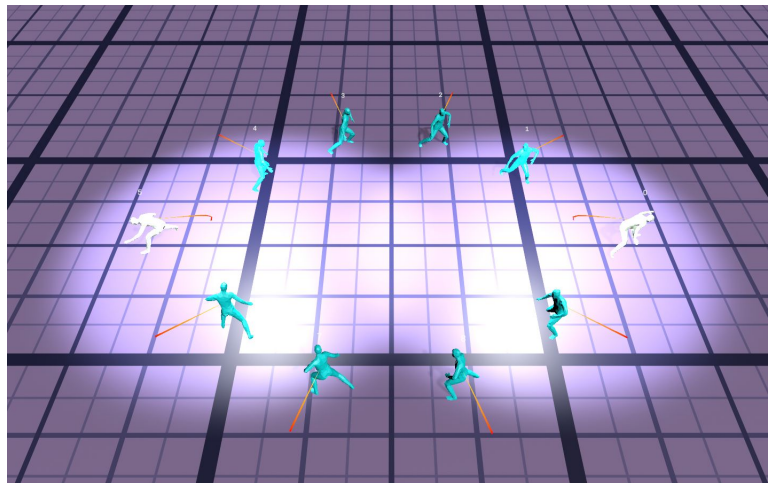


Open one of the folders and select one of the included subfolders. To be specific, open 13\_Logic, click on LOG0091 and then click on Select Folder. You will see this (animated)



In this example you have no control over the camera (it runs a prespecified path).

3. Let's try another one. Hit Esc; the Main Menu will show up. Click again on Scenario Select and in the file dialog select 11\_Epidemic and then EPI0001. You will see this



4. In this (as in most) scenario you can control the camera with the mouse. The preselected behavior is a *free camera*, which behaves much like the Unity Editor camera: right mouse button orbits, middle mouse button pans and mouse wheel zooms in/out. There are six default camera behaviors, you activate each one by hitting one of buttons F1 to F6. You can program (script) additional camera behaviors).
5. You can exit the application by showing the Main Menu (hit the Esc key) and clicking on Exit Application.
6. As you have no doubt realized, you show/hide the Main Menu by hitting the Esc key. When the Main Menu is visible, you select one of the eight choices with the mouse or by hitting Alt+1, ..., Alt+8. We will discuss choices 2 to 7 in later chapters, but feel free to experiment with each of them.
7. For the time being, let us just mention that the most interesting choice is Alt+4 (Open Base Application). It opens a file dialog which starts in the Scripts folder. Here you can go to a scenario folder, open the Lua script files and modify the corresponding dance scenario. Or you can create a new folder and write your own scripts.

### 3 Keyboard Shortcuts

In this section we give a brief description of the default keyboard shortcuts.

### 3.1 Main Menu

You show/hide the Main Menu by hitting Esc. When the main menu is visible you can select with the mouse or with Alt+1, ..., Alt+8 the following actions.

1. Scenario Select. Opens a file dialog in the Scripts (base) folder; here you can select a scenario subfolder, which will be played by the application.
2. Song Select. Opens a file dialog in the Music folder; here you can select a song, which will be played by the application.
3. Help. Opens this help file (UDMSluaHelp.pdf).
4. Open Base Directory. Opens a file dialog in the Scripts (base) folder. Now you can select a scenario subfolder, open the included lua scripts and modify them.
5. Open Music Directory. Opens a file dialog in the Music folder.
6. Reload Selected Scenario. Reloads and runs the last selected scenario.
7. Reload Global Settings. Reloads the global game settings.
8. Exit Application. Terminates the application.

In addition to the above you can also bring up the *console* by hitting the back-tick key ` . The use of the console is covered in Chapter 2 of the UDMSlua Manual.

### 3.2 Scenaria

When you are in one of the Scenaria you can use the following keys.

1. Esc: Show/Hide the Main Menu.
2. <. Decreases the music volume.
3. >. Increases the music volume.
4. **Camera Keys**. F1-F6. Described Below.
5. **Target Selection Keys**. LeftShift+1, ..., LeftAlt+0. Described below.
6. **Visual Effects Keys**. RightShift+1, ..., RightAlt+0. Described below.
7. ` (the back-tick key). The use of the console is covered in Chapter 2 of the UDMSlua Manual.

#### 3.2.1 Camera State Selection Keys

1. F1: activates the Free Camera controlled by the mouse, similarly to Unity Editor Camera.

RMB: Orbit.

MMB: Pan.

Wheel: Zoom In/Out.

2. F2: User Controlled Camera. In this state you can also use the following keys.

UpArrow: Move Camera Forward.

DownArrow: Move Camera Backward.

PgUp: Rotate camera upwards around  $x$ -axis.

PgDn: Rotate camera downwards around  $x$ -axis.

W: Increase X coordinate.  
S: Decrease X coordinate.  
A: Increase Z coordinate.  
D: Decrease Z coordinate.  
E: Increase Y coordinate.  
Q: Decrease Y coordinate.

3. F3: Top Down View following the *camera target* (a target is **required** and selected by the *target selection keys*, see below).

UpArrow: Decrease Y coordinate.  
DownArrow: Increase Y coordinate.

4. F4: Free Top DownView.

W: Increase X coordinate.  
S: Decrease X coordinate.  
A: Increase Z coordinate.  
D: Decrease Z coordinate.  
E: Increase Y coordinate.  
Q: Decrease Y coordinate.

5. F5: Follow the *camera target* (a target is **required** and selected by the *target selection keys*, see below).

UpArrow: Move Camera Forward.  
DownArrow: Move Camera Backward.  
PageUp: Increase Y coordinate.  
PageDown: Decrease Y coordinate.

6. F6: Orbit around the *camera target* (a target is **required** and selected by the *target selection keys*, see below).

UpArrow: Decrease Orbit Radius.  
DownArrow: Increase Orbit Radius.  
PageUp: Increase Y coordinate.  
PageDown: Decrease Y coordinate.

### 3.2.2 Target Selection Keys

Some camera behaviors require a *camera target*, which can be any of the dancers / agents. Camera targets can be set by script (see Chapter 2 of the UDMSlua Manual) or by the following keys (for the first 9 agents).

1. LeftShift+1: Agent No.1.
2. LeftShift+2: Agent No.2.
3. LeftShift+3: Agent No.3.
4. LeftShift+4: Agent No.4.
5. LeftShift+5: Agent No.5.
6. LeftShift+6: Agent No.6.

7. LeftShift+7: Agent No.7.
8. LeftShift+8: Agent No.8.
9. LeftShift+9: Agent No.9.
10. LeftShift+0: Remove the current target.

### **3.2.3 Visual Effects Keys**

A large number of visual effects can be applied by script (see Chapter 2 of the UDMSlua Manual). Some of these have keyboard shortcuts, as indicated below.

1. RightShift+1: Sobel Edge Enhancement.
2. RightShift+2: MotionBlur.
3. RightShift+3: Negative.
4. RightShift+4: ThermalVision.
5. RightShift+5: Posterization.
6. RightShift+6: GrayScale.
7. RightShift+7: DuoTone.
8. RightShift+8: Colorization.
9. RightShift+9: Emboss.
10. RightShift+0: Remove all visual effects.