

MP Animator Unity Sample Program

Operation Manual

Ver. 1.0

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1. Purpose

This document explains the operation method for the Unity version sample program of MP Animator.

2. Configurable Items from Unity Editor

This section explains the configuration items of the sample program that can be set from the Unity Editor screen.

When you select mpSampleScene/mpface in the Hierarchy window, the following items [1] to [4] are displayed in the Inspector window, allowing you to configure the sample program (see Figure 2-1).

[1] [Enable Teeth Exposure_] Checkbox

This function is implemented to automatically adjust the brightness of the mouth texture to match the photo, in order to prevent the mouth texture from being too bright and standing out when the photo used for avatar generation is dark. Select whether to enable or disable this function.

[2] [Preload Avatar_] Checkbox

Select whether or not to display the avatar immediately after the sample program starts.

[3] [Face Name_] Menu

Select the type of avatar to be displayed immediately after the sample program starts.

[4] [Voice Name_] Menu

Select the audio file to be played when the [Voice] button of the sample program is pressed.

After making the necessary settings above, install it on each platform.

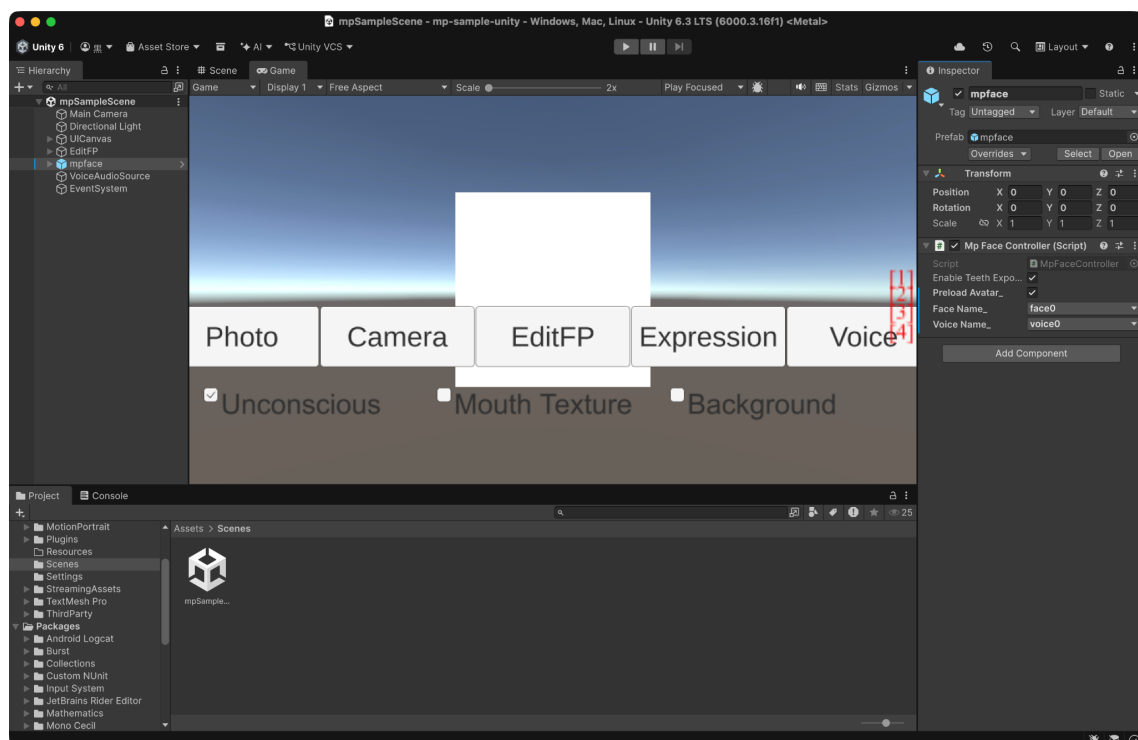


Figure 2-1: State where mpSampleScene/mpface is selected in the Hierarchy window. Numbers [1] to [4] are attached to the setting items in the Inspector window.

3. Operation Method

This chapter explains how to operate the sample program. The explanation uses screenshots from an iPhone, but the content is the same for Android and PC (Windows / macOS / Linux).

3.1. Avatar Display Screen

The screen that displays the avatar in the sample program is referred to as the "Avatar Display Screen" below.

Immediately after the sample program starts, the default avatar is displayed on the Avatar Display Screen. Figure 3-1 is a screenshot of the screen immediately after the sample program starts.

Avatars created from image files or input images taken with a camera are also displayed on the same screen.



Figure 3-1: Avatar Display Screen (Immediately after startup).
Numbers [1] to [8] are attached to the GUI parts.

The functions of each GUI part [1] to [8] are explained below.

[1] [Photo] button

Displays a dialog for selecting an input image file. Immediately after selecting an input image file, feature point editing automatically begins (see "3.3. Feature Point Editing Function").

[2] [Camera] button

Starts shooting using the webcam on a PC or the front camera on Android/iOS. The captured image is displayed in real-time on the Preview Screen (see "3.2. Preview Screen").

[3] [EditFP] button

Starts editing feature points for the avatar generated from an image file or camera capture (see "3.3. Feature Point Editing Function").

[4] [Expression] button

Switches the avatar's expression. The expression changes sequentially with each press.

[5] [Voice] button

Plays audio, and the avatar performs lip sync according to the audio.

[6] [Unconscious] checkbox

Toggles the presence or absence of the avatar's unconscious animation. The ON/OFF change result is applied immediately to the displayed avatar.

[7] [Mouth Texture] checkbox

Toggles the enabling/disabling of mouth texture replacement. When checked ON, the image file mouth/[upper/lower]_teeth.png contained in the resource file

Assets/StreamingAssets/MotionPortrait/Resources.zip

is used as the avatar's mouth texture. By default, the existing mouth texture image colored purple is placed as a sample. It is possible to replace the mouth texture by replacing this image file with your own created image file. The ON/OFF change result is not applied immediately to the displayed avatar, but is applied at the next avatar generation.

[8] [Background] checkbox

Toggles the drawing of the background. The ON/OFF change result is applied immediately to the displayed avatar.

The following operations are also possible:

- The avatar's face direction changes to face the position where the screen is pressed or dragged.

3.2. Preview Screen

The Preview Screen is displayed immediately after the [Camera] button is pressed on the Avatar Display Screen (see Figure 3-2).



Figure 3-2: Preview Screen.
Numbers [1] and [2] are attached to the GUI parts.

The captured image from the camera is displayed in real-time in the rectangular area enclosed by the red line in Figure 3-2.

The functions of GUI parts [1] and [2] are explained below.

[1] [Shutter] button

Starts the Feature Point Editing function using the captured camera image as the input image.

[2] [Cancel] button

Cancels the camera shooting.

3.3. Feature Point Editing Function

The Feature Point Editing function is a function for editing the feature points required for avatar generation.

The Feature Point Editing function starts immediately after one of the following operations (a)-(c) is performed:

- (a) On the Avatar Display Screen, press the [Photo] button to select an input image.
- (b) On the Preview Screen, press the [Shutter] button to acquire a camera captured image.
- (c) On the Avatar Display Screen, press the [EditFP] button while the avatar generated from an image file or camera capture is displayed.

The Feature Point Editing function consists of the following four screens (1)-(4):

- (1) Confirmation Screen
- (2) Face Editing Screen
- (3) Eye Editing Screen
- (4) Mouth Editing Screen

In this chapter, the operation (a) of selecting the following image (Figure 3-3) is used as an example to explain the operation method on each screen with screenshots.



Figure 3-3: Example of an input image.

(1) Confirmation Screen

Immediately after performing one of the operations (a)-(c) mentioned above, the screen transitions to this screen (see Figure 3-4).

- On this screen, all feature points are displayed overlaid on the input image or captured image.
- The outline of each displayed feature point is as follows (for details on each feature point, refer to the editing screens (2)-(4) described later):
 - Face: Specifies the face area with four points: top, bottom, left, and right. A rectangle is overlaid on the points to make the placement of the points easier to confirm.
 - Eyes: There are two rounded rectangles corresponding to the left and right eyes, and the position, width/height size, and rotation angle of the rectangle are specified to enclose each eye.
 - Mouth: Specifies the shape of the mouth with three points: left end, center, and right end.
- The placement of feature points is determined based on the following information for each of the operations (a)-(c) mentioned above. (The position, size, and angle of the feature points in this state are referred to as the "initial state" below.)
 - (a), (b): Feature points automatically analyzed from the input image or captured image are displayed. If the face cannot be automatically analyzed, such as with images of dogs or cats, feature points are displayed at predetermined positions and sizes.
 - (c): The feature points set when the avatar was generated are displayed.

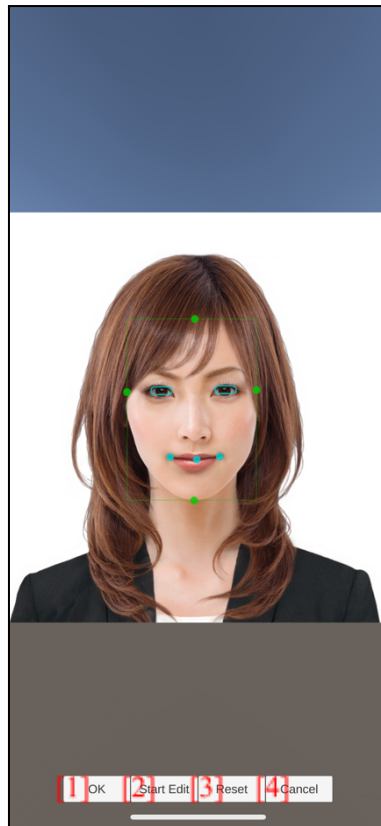


Figure 3-4: Confirmation Screen.

The displayed feature points are those automatically detected from the image in Figure 3-3. Numbers [1] to [4] are attached to the GUI parts.

The functions of each GUI part [1] to [4] are explained below.

[1] [OK] button

Generates the avatar using all the feature point information displayed on the screen. The feature point editing function ends, and the screen transitions to the Avatar Display Screen, displaying the newly generated avatar.

[2] [Start Edit] button

Starts editing the feature points. The screen transitions to the first editing screen ((2) Face Editing Screen).

[3] [Reset] button

Resets the editing results on all editing screens (2)-(4). All feature points are returned to their initial state.

[4] [Cancel] button

Ends the feature point editing function and transitions to the Avatar Display Screen. The input image/captured image is discarded, and the avatar is not updated.

(2) Face Editing Screen

This is the screen for editing the face feature points (see Figure 3-5).

- There are four points to be placed on the top, bottom, left, and right of the face.
- A rectangle is overlaid on the points to make the placement of the points easier to confirm.
- Each point is placed at the following approximate positions (not strict positions):
 - Top: Placed on the forehead (the hairline in the case of humans).
 - Bottom: Placed on the tip of the chin.
 - Left: Placed on the left contour of the face, at the level of the eyes.
 - Right: Placed on the right contour of the face, at the level of the eyes.
- If the face is tilted, the position of the points should be specified taking the tilt into account (Reference: "3.4. (Supplement) Feature Point Editing when the Face is Tilted").
- When the screen is pressed, the point closest to the pressed position among the four points is automatically selected. The selected point is highlighted. In Figure 3-5, the feature point on the right side of the face is selected.
- The position of the point can be changed by dragging the selected point.
- When the screen press is released, the point selection is canceled.

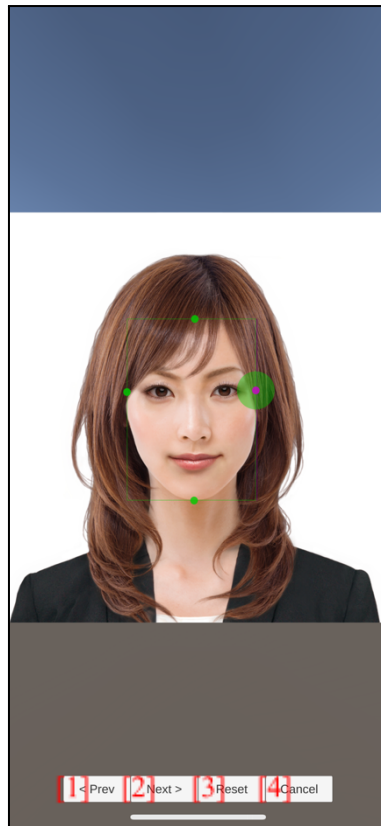


Figure 3-5: Face Editing Screen.
The feature point on the right side of the face is selected.
Numbers [1] to [4] are attached to the GUI parts.

The functions of each GUI part [1] to [4] are explained below.

[1] [Prev] button

Returns to the previous screen ((1) Confirmation Screen). The editing results on this screen are saved even after the screen transition.

[2] [Next] button

Proceeds to the next screen ((3) Eye Editing Screen). The editing results on this screen are saved even after the screen transition.

[3] [Reset] button

Returns the feature points on this screen to their initial state.

[4] [Cancel] button

Discards all editing results on screens (2)-(4) and transitions to the (1) Confirmation Screen.

(3) Eye Editing Screen

This is the screen for editing the position, size (width/height), and rotation angle of the eye feature points (see Figure 3-6).

- It consists of two rounded rectangles corresponding to the left and right eyes, and the position, width/height size, and rotation angle are specified so that each rectangle covers the eye.
- If the eye is tilted, specify the rotation angle according to the tilt of the eye (Reference: "3.4. (Supplement) Feature Point Editing when the Face is Tilted").
- When the screen is pressed, the rectangle closer to the pressed position is automatically selected and highlighted. (In Figure 3-6, the rectangle on the right is highlighted.)
- The position of the rectangle can be changed by dragging the highlighted rectangle.
- Unlike the (2) Face Editing Screen mentioned above, the selection of the rectangle is not canceled when the screen press is released. The selected rectangle is displayed with its border changing to red.
- With the rectangle selected, the size (width/height) and rotation angle of the rectangle can be changed by pressing buttons [5] to [10] described later (see Figure 3-7).



Figure 3-6: Eye Editing Screen.
The rectangle on the right is highlighted.



Figure 3-7: Eye Editing Screen.
The rectangle on the right is selected.
Numbers [1] to [10] are attached to the GUI parts.

The functions of each GUI part [1] to [10] are explained below.

[1] [Prev] button

Returns to the previous screen ((2) Face Editing Screen). The editing results on this screen are saved even after the screen transition.

[2] [Next] button

Proceeds to the next screen ((4) Mouth Editing Screen). The editing results on this screen are saved even after the screen transition.

[3] [Reset] button

Returns the feature points on this screen to their initial state.

[4] [Cancel] button

Discards all editing results on screens (2)-(4) and transitions to the (1) Confirmation Screen.

[5] [X+] button

Increases the horizontal size of the selected rectangle.

[6] [X-] button

Decreases the horizontal size of the selected rectangle.

[7] [Y+] button

Increases the vertical size of the selected rectangle.

[8] [Y-] button

Decreases the vertical size of the selected rectangle.

[9] [R+] button

Rotates the selected rectangle counter-clockwise.

[10] [R-] button

Rotates the selected rectangle clockwise.

(4) Mouth Editing Screen

The mouth feature points are edited on this screen (see Figure 3-8).

- There are three points: left end, center, and right end.
- If the face is tilted, the position of the points should be specified taking the tilt into account (Reference: "3.4. (Supplement) Feature Point Editing when the Face is Tilted").
- When the screen is pressed, the point closest to the pressed position among the three points is automatically selected. The selected point is highlighted. In Figure 3-8, the feature point on the right end is selected.
- The position of the point can be changed by dragging the selected point.
- When the screen press is released, the point selection is canceled.



Figure 3-8: Mouth Editing Screen.

The feature point on the right end of the mouth is selected.
Numbers [1] to [4] are attached to the GUI parts.

The functions of each GUI part [1] to [4] are explained below.

[1] [Prev] button

Returns to the previous screen ((3) Eye Editing Screen). The editing results on this screen are saved even after the screen transition.

[2] [Next] button

Transitions to the initial (1) Confirmation Screen. After the screen transition, all editing results from (2)-(4) are reflected on the Confirmation Screen.

[3] [Reset] button

Returns the feature points on this screen to their initial state.

[4] [Cancel] button

Discards all editing results on screens (2)-(4) and transitions to the (1) Confirmation Screen.

After editing the feature points, pressing the [OK] button on the (1) Confirmation Screen generates the avatar as shown in Figure 3-9.



Figure 3-9: Avatar generation result.

3.4. (Supplement) Feature Point Editing when the Face is Tilted

In "3.3. Feature Point Editing Function", an input image with a straight face direction (Figure 3-3) was used as an example for explanation. For reference, an example of feature point editing when an image with a diagonally tilted face (see Figure 3-10) is input is provided.

Figure 3-11 shows the screenshot of the (1) Confirmation Screen when the image in Figure 3-10 is input. The feature points shown here are those obtained by automatic detection, but they are arranged almost the same as the feature points in Figure 3-4 obtained by automatic detection from Figure 3-3. In this way, even if the face is tilted, set the feature points in the same way as when the face direction is straight. Figure 3-12 shows a screenshot of the avatar generation result.



Figure 3-10: Input image with the face tilted diagonally, processed from the image in Figure 3-3.

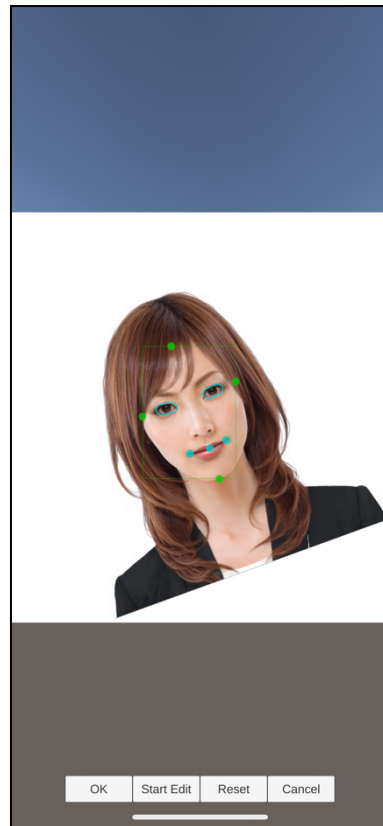


Figure 3-11: (1) Confirmation Screen when using Figure 3-10 as the input image.
The displayed feature points are those automatically detected from the image in Figure 3-10.



Figure 3-12: Avatar generation result when using Figure 3-10 as the input image.

3.5. (Supplement) When Inputting Images Other Than Humans

Avatars can be generated using the same procedure even when inputting images of animals other than humans, such as dogs and cats.

As an example, screenshots of part of the generation process when inputting the dog image in Figure 3-13 are provided.



Figure 3-13: Dog input image.

Figure 3-14 is the (1) Confirmation Screen displayed immediately after selecting the image in Figure 3-13.

Unlike humans, the face cannot be automatically recognized, so the feature points are placed at predetermined positions and sizes.

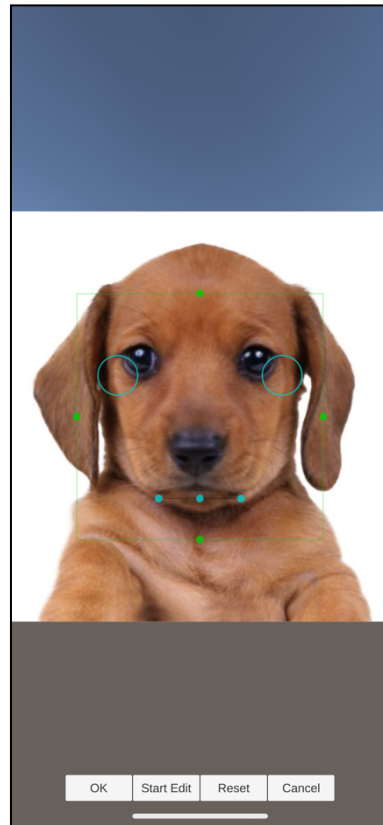


Figure 3-14: Confirmation Screen with dog input image (before feature point editing).

Figure 3-15 is the (1) Confirmation Screen after adjusting the position and size of the feature points on each editing screen.

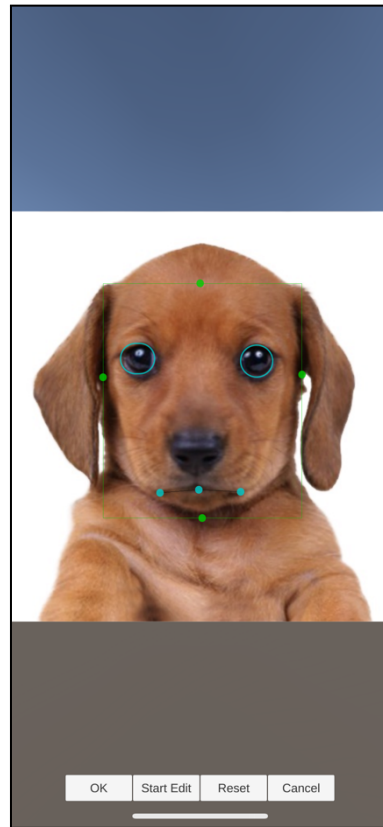


Figure 3-15: Confirmation Screen with dog input image (after feature point editing).

Figure 3-16 is the result of generating the avatar in the state of Figure 3-15 after manually adjusting the feature points.

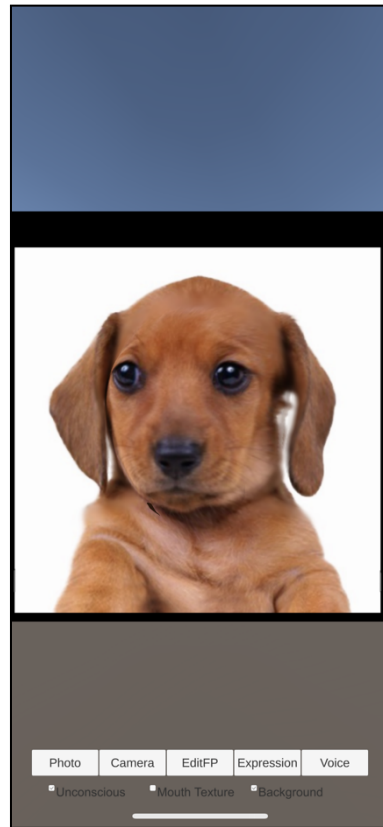


Figure 3-16: Avatar generation result with dog input image.