Midterm Presentation

Magic-brush:An interactive ARPG game via user-drawing characters

Team 6

2024/11/13

Summary

1. Motivation

2. Related work

3. Objectives

4. Approach

5. Current state

6. Labor division

1. Motivation

Interactive Computer Graphics

- ❖ Provide Fun, personalized game experience
- ❖ Apply an innovative method on a concrete context
- ❖ Save storage space and enhance game performance while lighting assets data

Ways to improve user immersion and interaction

❖ Scene

❖ Music or sound effects
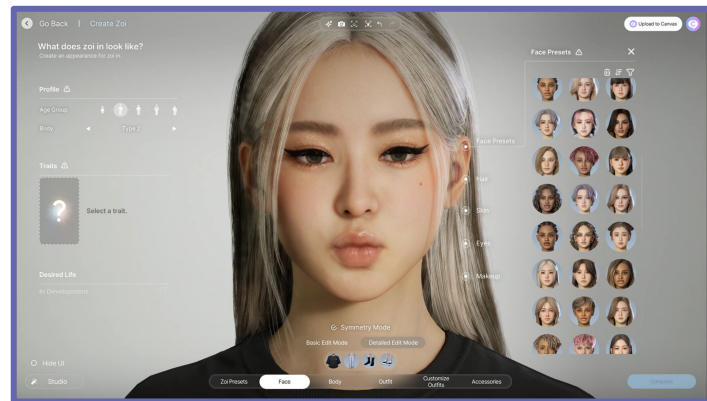
❖ Story

❖ **Character**

2. Related work

Self-representation in games

Zelda:Tears of kingdoms

Functional

INZOI

Interactive

3. Objectives: Our project demo

An Action-RPG Style Open World Game

3. **Objectives:** - Promised improvements
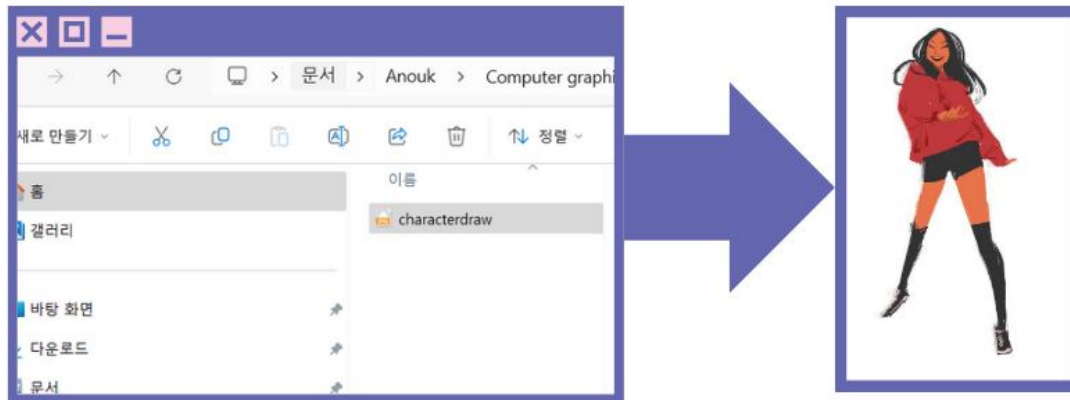
(1) Hand Drawing style

(3) DIY characters

(2) Map choosing
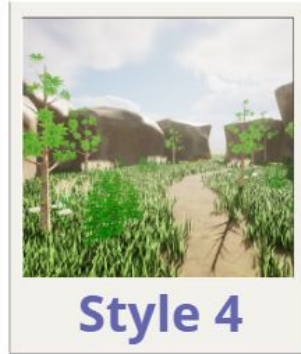
(4) Lighted memory space (better performance)

3. Objectives: DIY characters

❖ User's hand drawing character
❖ File importation in game environment
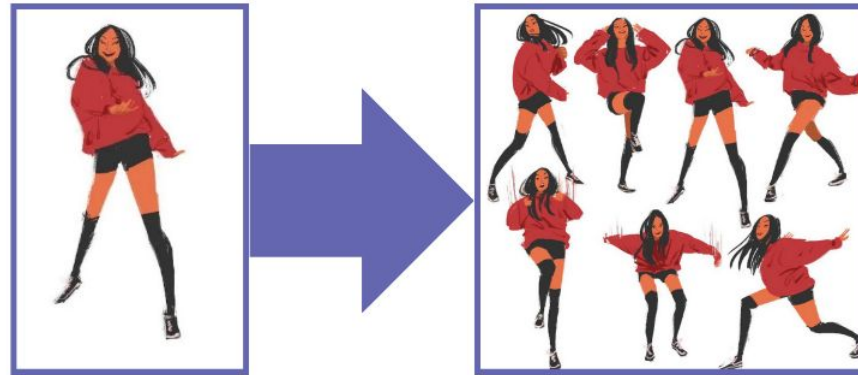
=> Automatic 3D and animation generation

3. Objectives: Map selection

Style 1

Style 2

Style 3

Style 4

❖ Free assets (*cgtrader*)
❖ User's selection and importation in game environment

=> Style consistency for a full personalized game experience
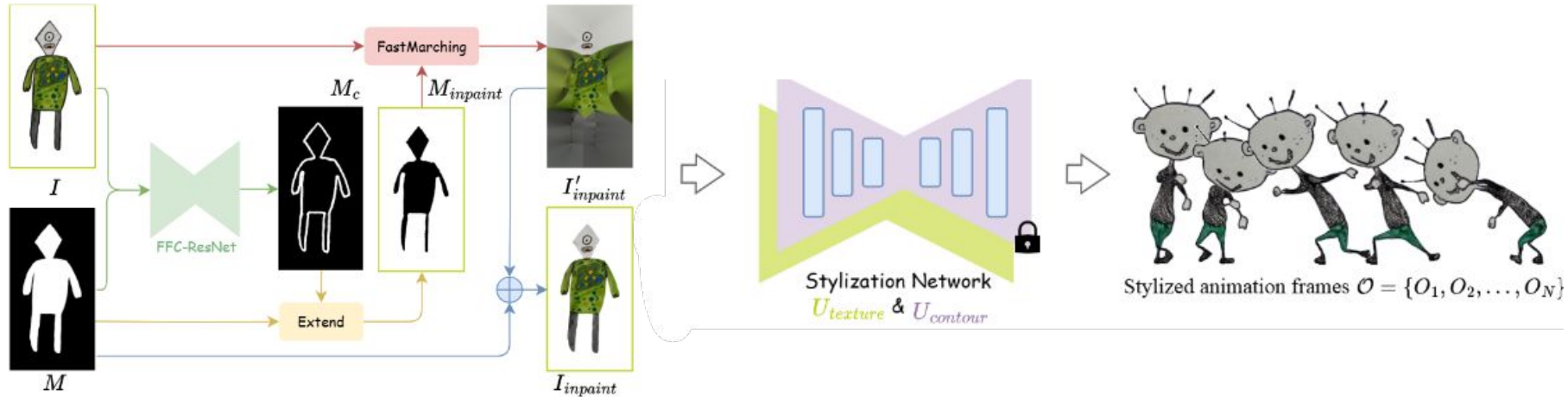
4. Approach: Character generation

2D hand drawing file   *3D animated models*

❖   Hand drawing constraints
❖   DrawingSpinUp method (*see next week's presentation*)
❖   Target animation types for game purposes

=> Generation of several animations from a hand drawing character

4. Approach: DrawingSpinUp (quick preview)

FFC-ResNet

M_c

$M_{inpaint}$

FastMarching

Extend

I

M

$I'_{inpaint}$

$I_{inpaint}$

Stylization Network

$U_{texture}$ & $U_{contour}$

Stylized animation frames $\mathcal{O} = \{O_1, O_2, \ldots, O_N\}$

❖ Removal of contours that mislead the 3D generation
❖ 3D reconstruction process with rigging and retargeting
❖ Contours restoration with a stylization network

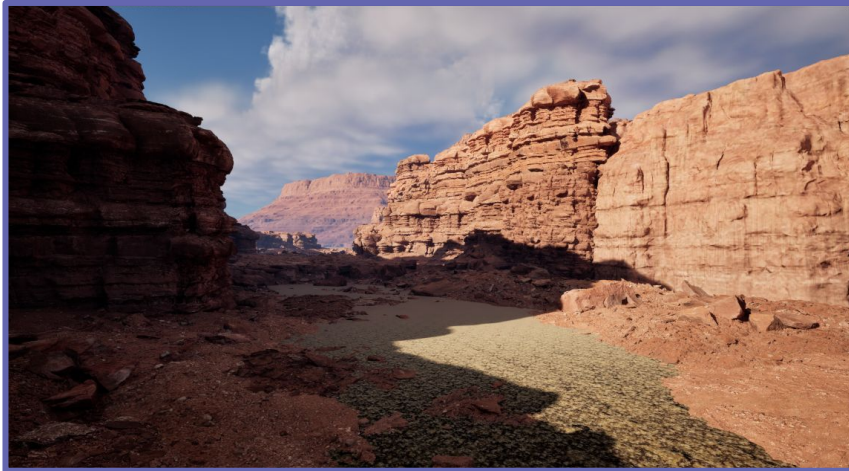=> Generation of stylized character's animations from a hand drawing
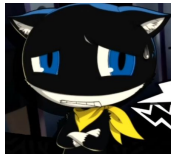
4. Approach: Animation in game
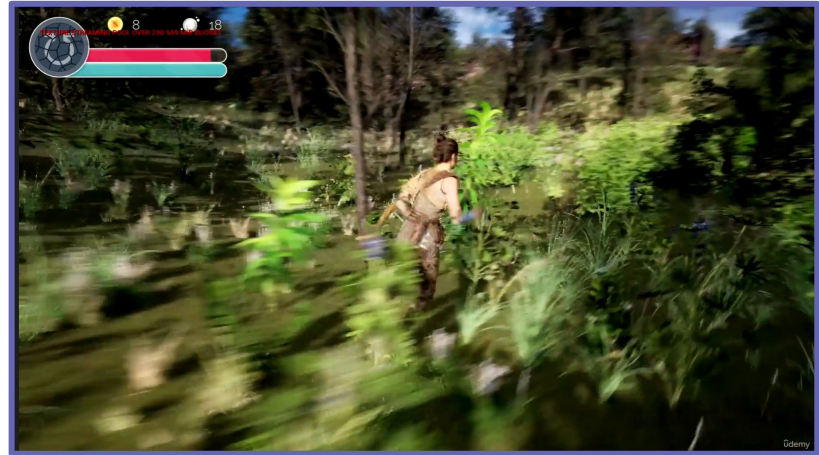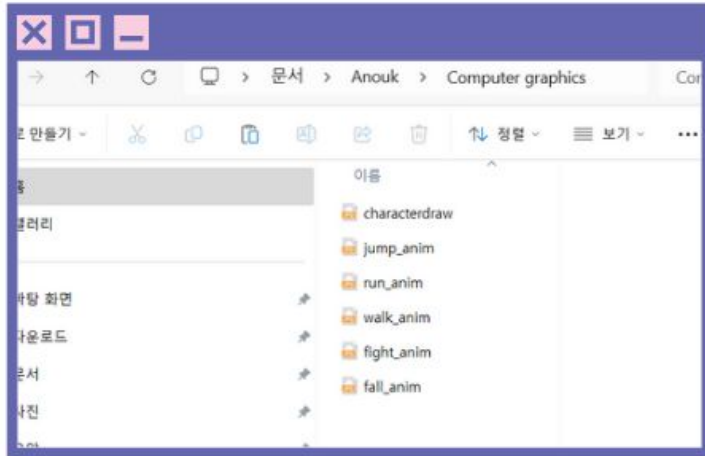
- ❖ Temporary animation files stored
- ❖ Game implemented on Unreal Engine
- ❖ Target animation launched according to user inputs

=> Optimization of performance, storage saving

5. Current state: UE

5. Current state: Play with code

Hard time with the env

Stage 1	Stage 2	Stage 3
Contour Removal	**Textured Character Generation**	**Stylized Contour Restoration**

```
[1000] [discriminator_loss]  0.4313 [g_adv_loss]  0.3601 [g_image_loss]  0.0661 [g_perc_loss]  0.2441 [generator_loss]  1.9088. Took 107.03
405046463013
Eval of batch: 1000 took 0.39438819885253906
[2000] [discriminator_loss]  0.4657 [g_adv_loss]  0.3065 [g_image_loss]  0.0402 [g_perc_loss]  0.1102 [generator_loss]  0.9753. Took 213.44
703650474548
Eval of batch: 2000 took 0.41085171699523926
Training finished, cost time:  317.7432653903961
```

6. Schedule and labor division

Thank you!