

# 'Windup':

An Animation Feature Quality  
Rendering in Real-Time

Yibing Jiang



# Overview



Concepts



Environments



Character



Lighting

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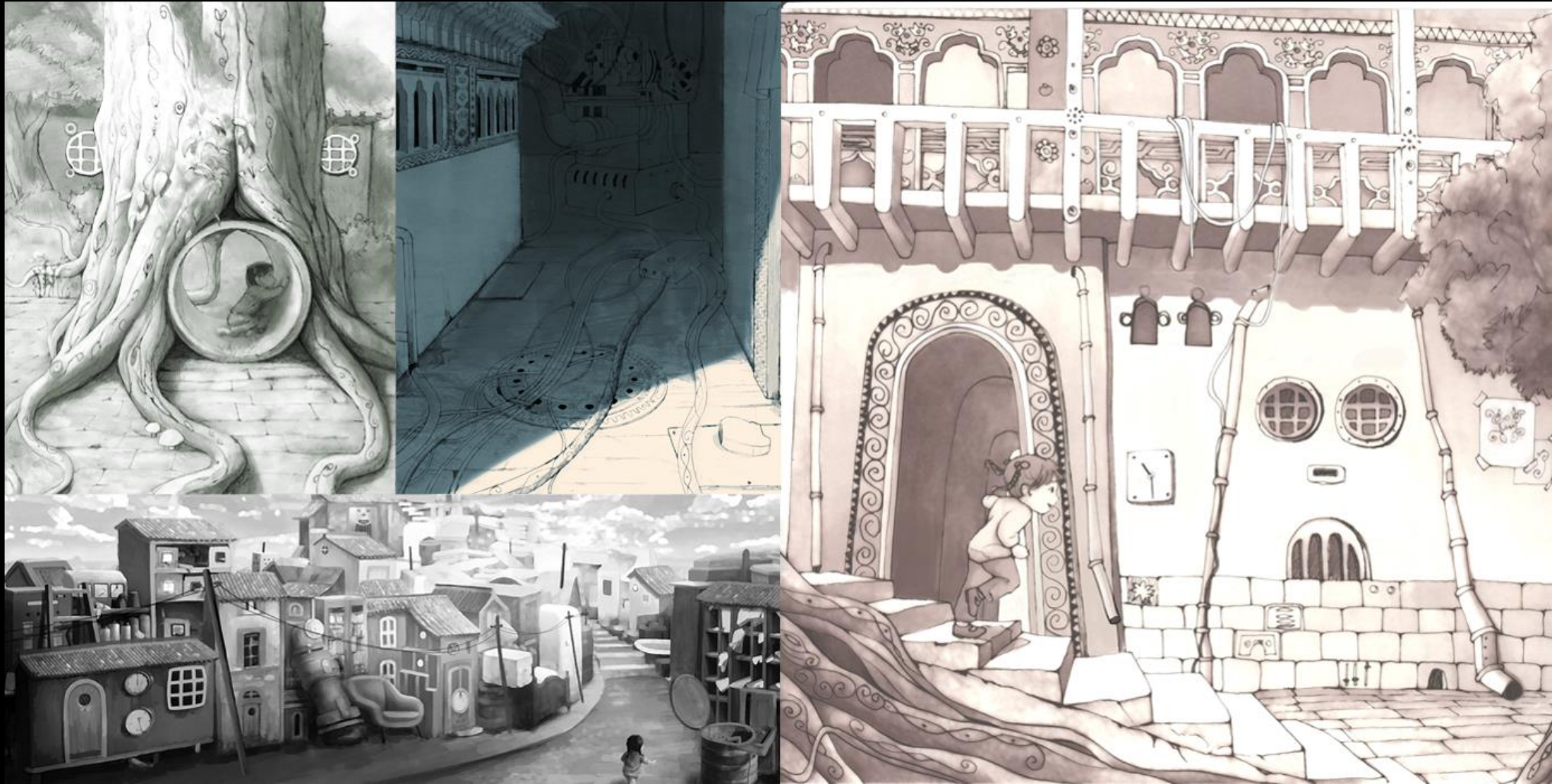
# Test Scene

THE FOLLOWING TEST SCENE  
WAS CAPTURED DIRECTLY FROM





# Concepts



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# Challenges

- Style

We want to have unique style and don't want to be too realistic.

- Technical limitations

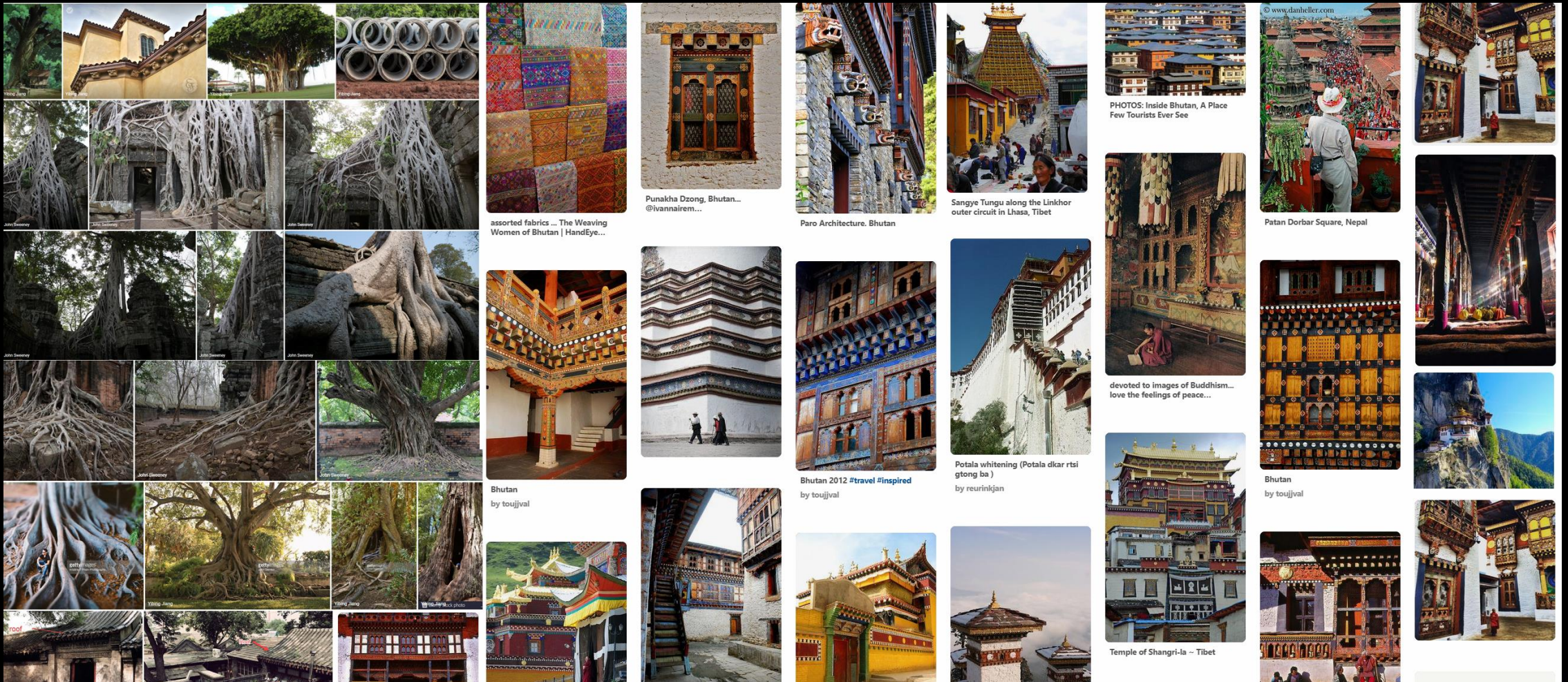
We want to avoid difficult issues as much as possible, such as sorting and animated textures and complicated simulations.

- Color

We want the characters to stand out and at the same time match their environment.



# Environmental References



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# We Need to Simplify the shapes





# Inspirations



Eyvind Earle's illustration of trees



# Sketch of the scene

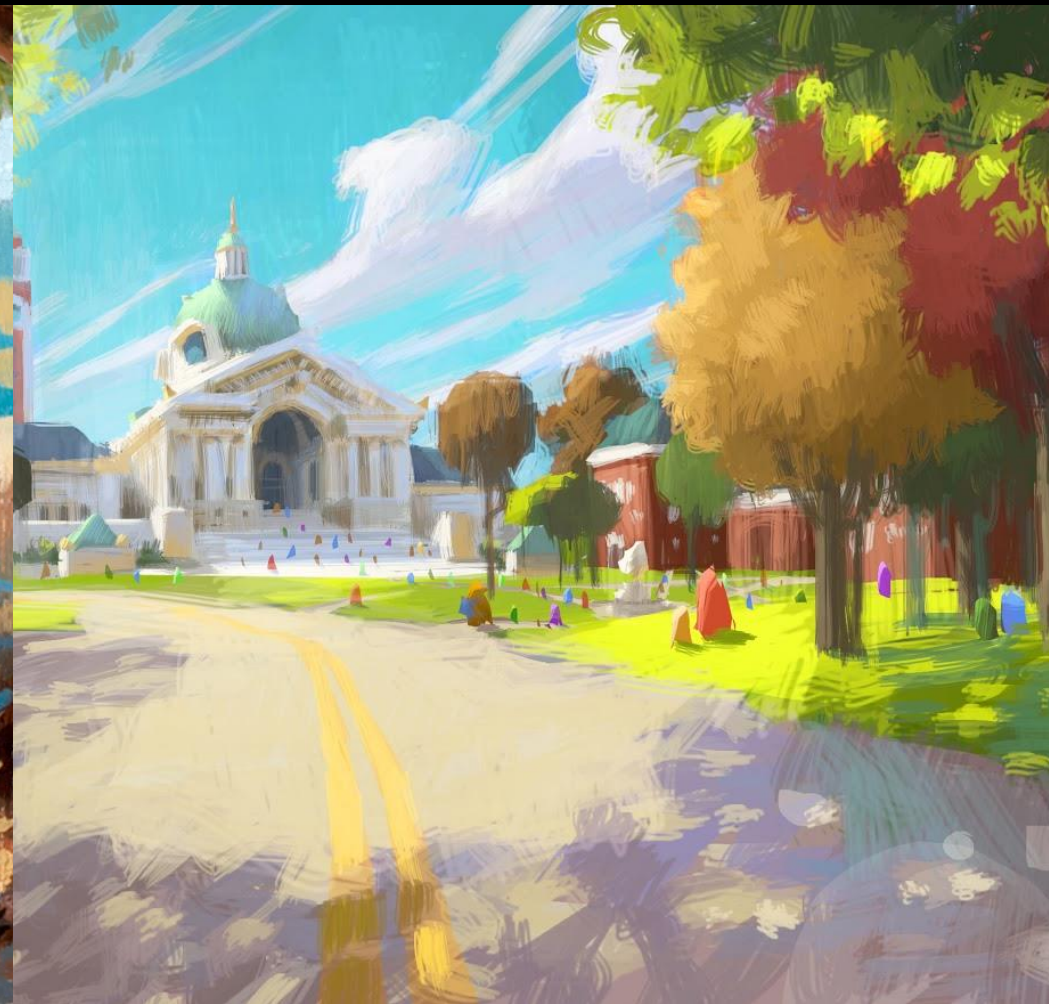


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# Inspirations



Dice Tsutsumi's painting

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# Color Scripts



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# Characters





# Technical limitations



- We have her hair braided to avoid sorting issues.
- Darker hair will have less issues on shading.
- Similar method as Eyvind's simplified trees. Our main character is wearing a rounded simple sweater, which will be easier to rig and not need to worry about things like wrinkle maps. Instead, we added fabric details, to make sure her outfit still looks interesting.

# Creating The Character



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# Character Modeling



Revolution of the girl model



# Hair Modeling



Transfer the hair proxy into hair cards



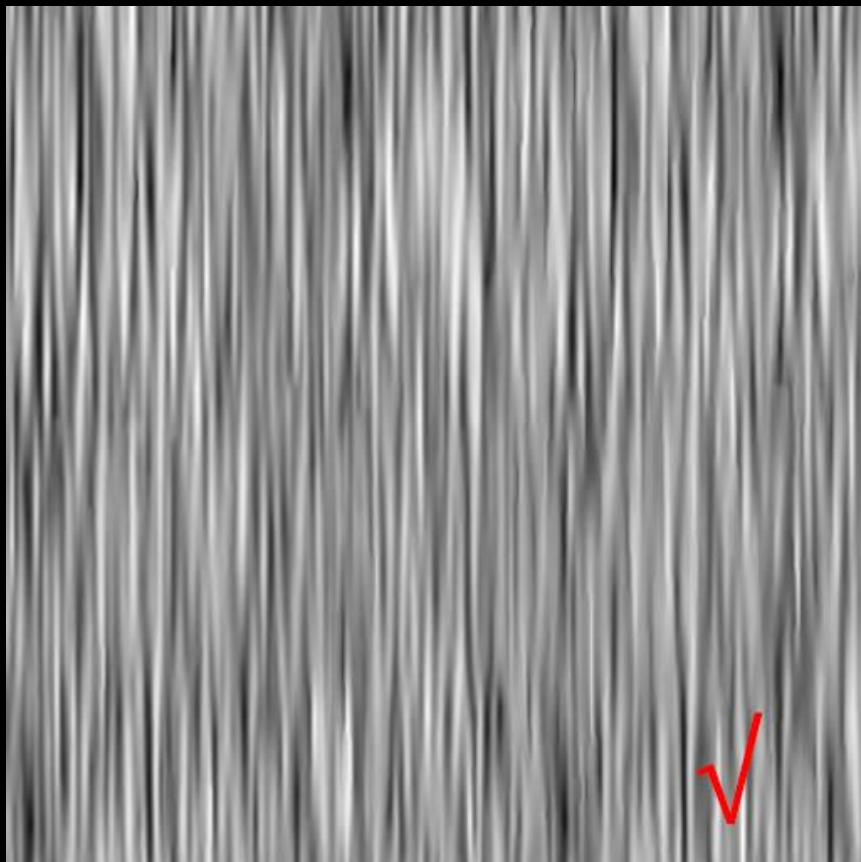
# Hair material



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# Hair texture



256X256



2048X2048



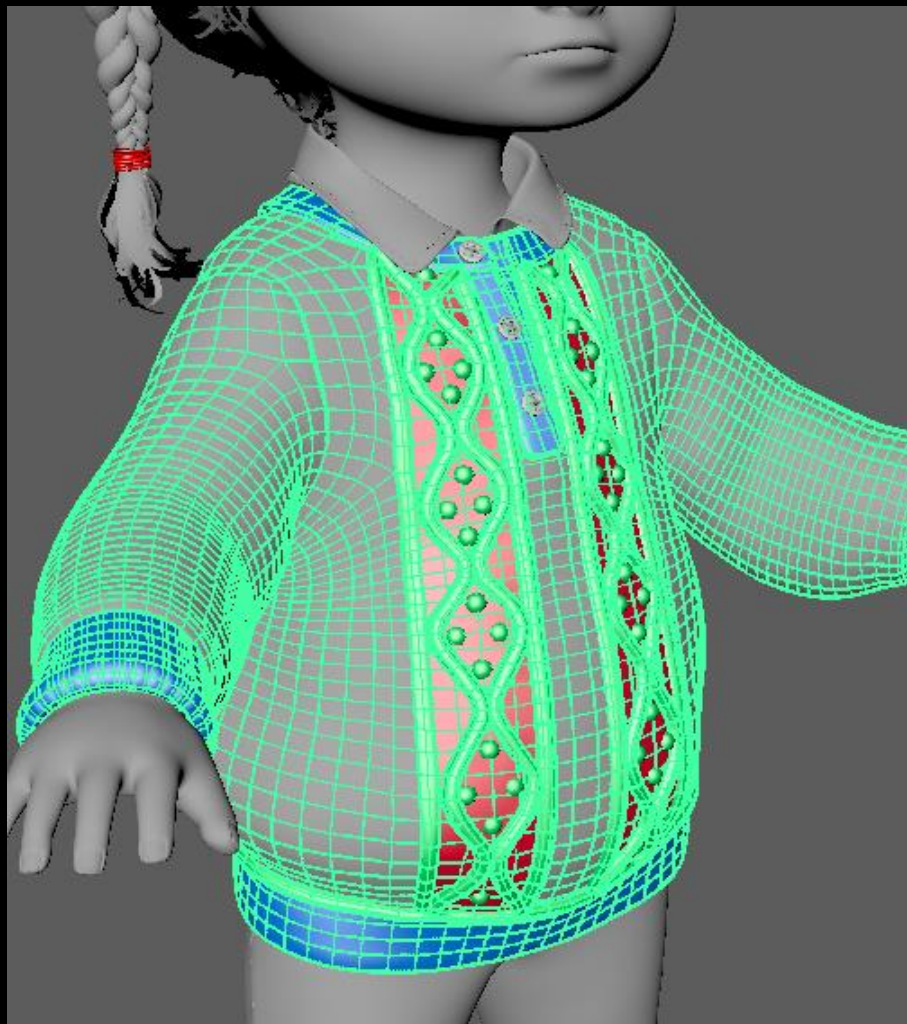
# Adding details



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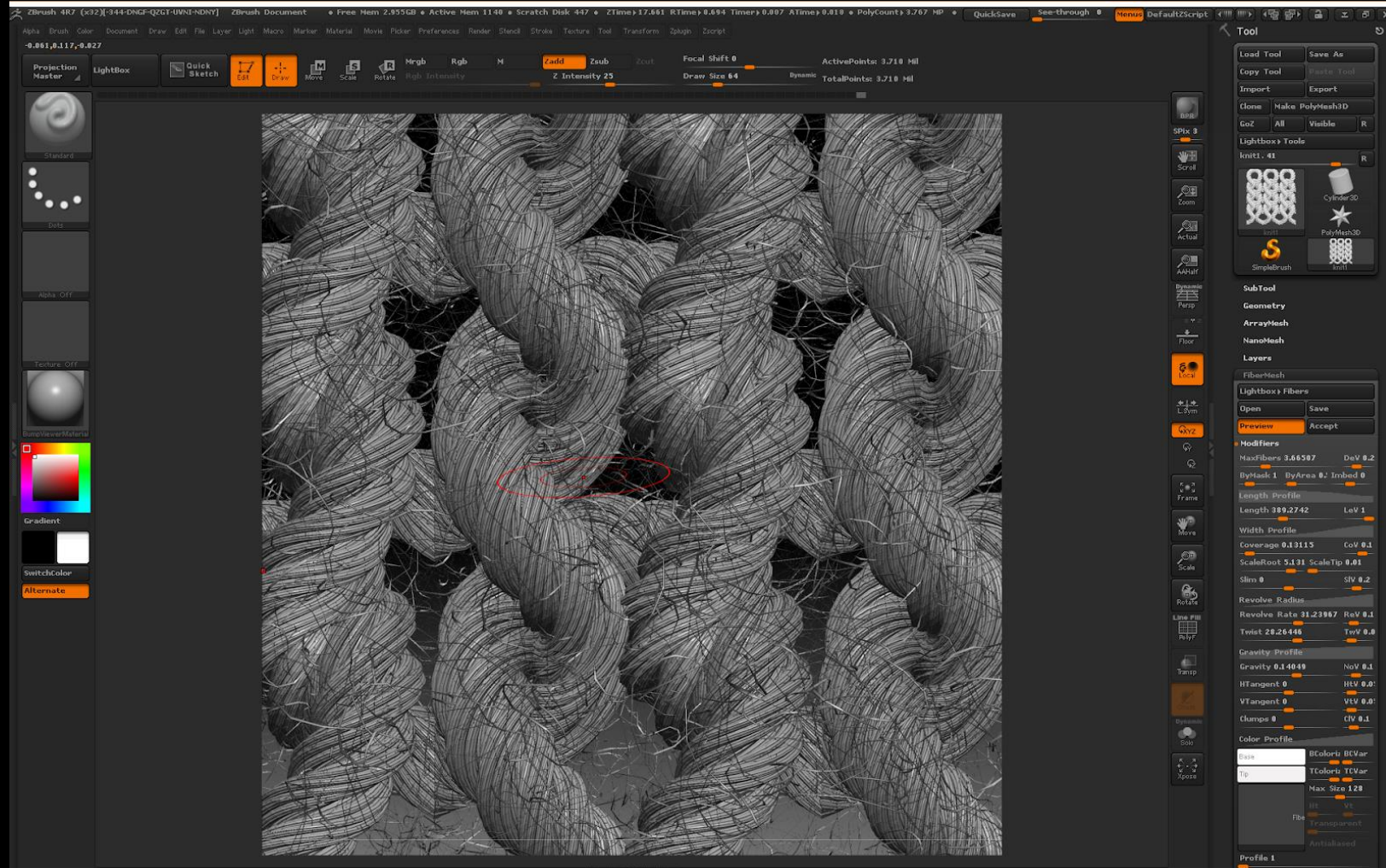


# Sweater Model





# Fabric details

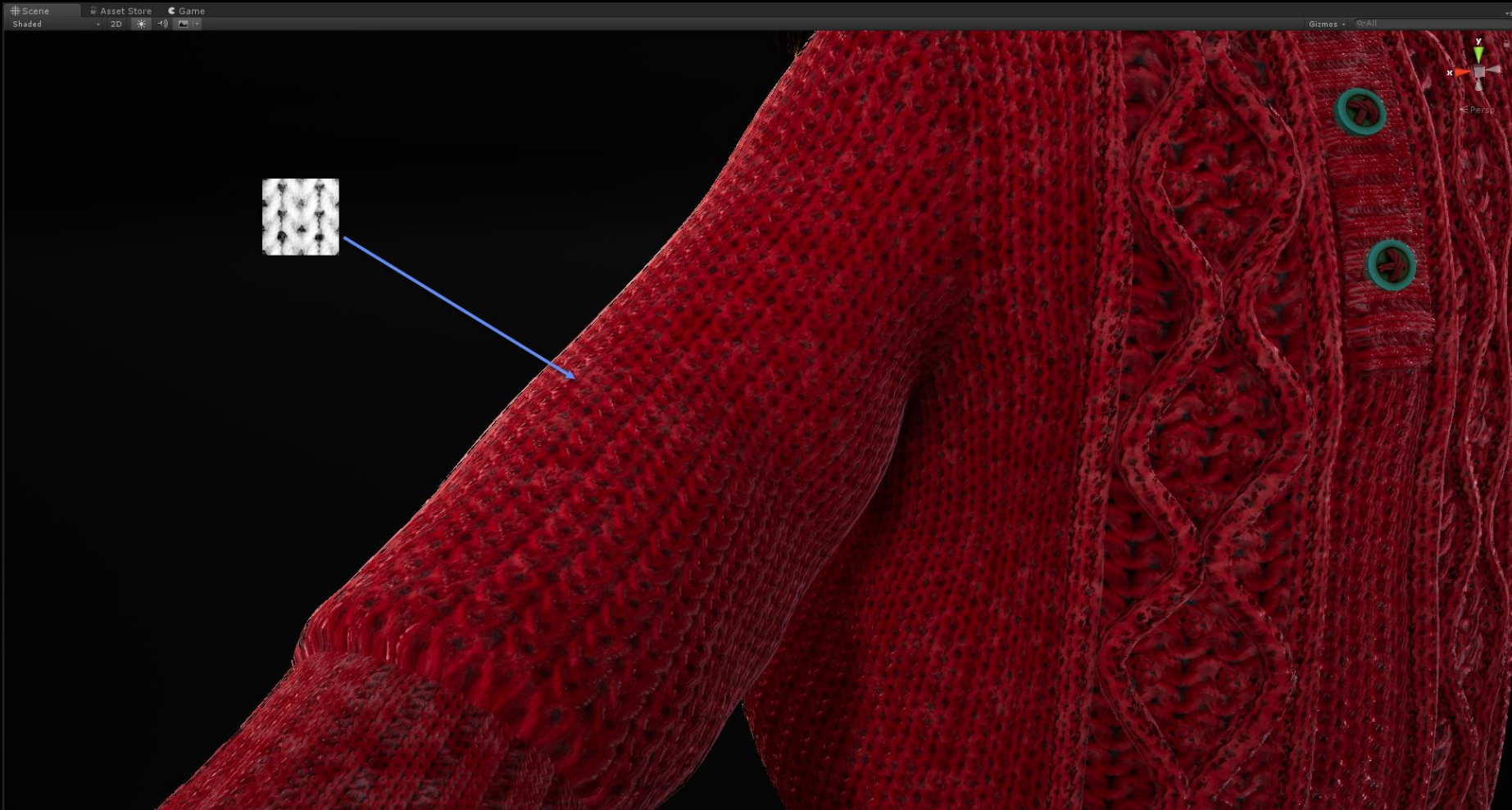


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# Fabric details



Tileable textures for fabric details



# Fuzz details

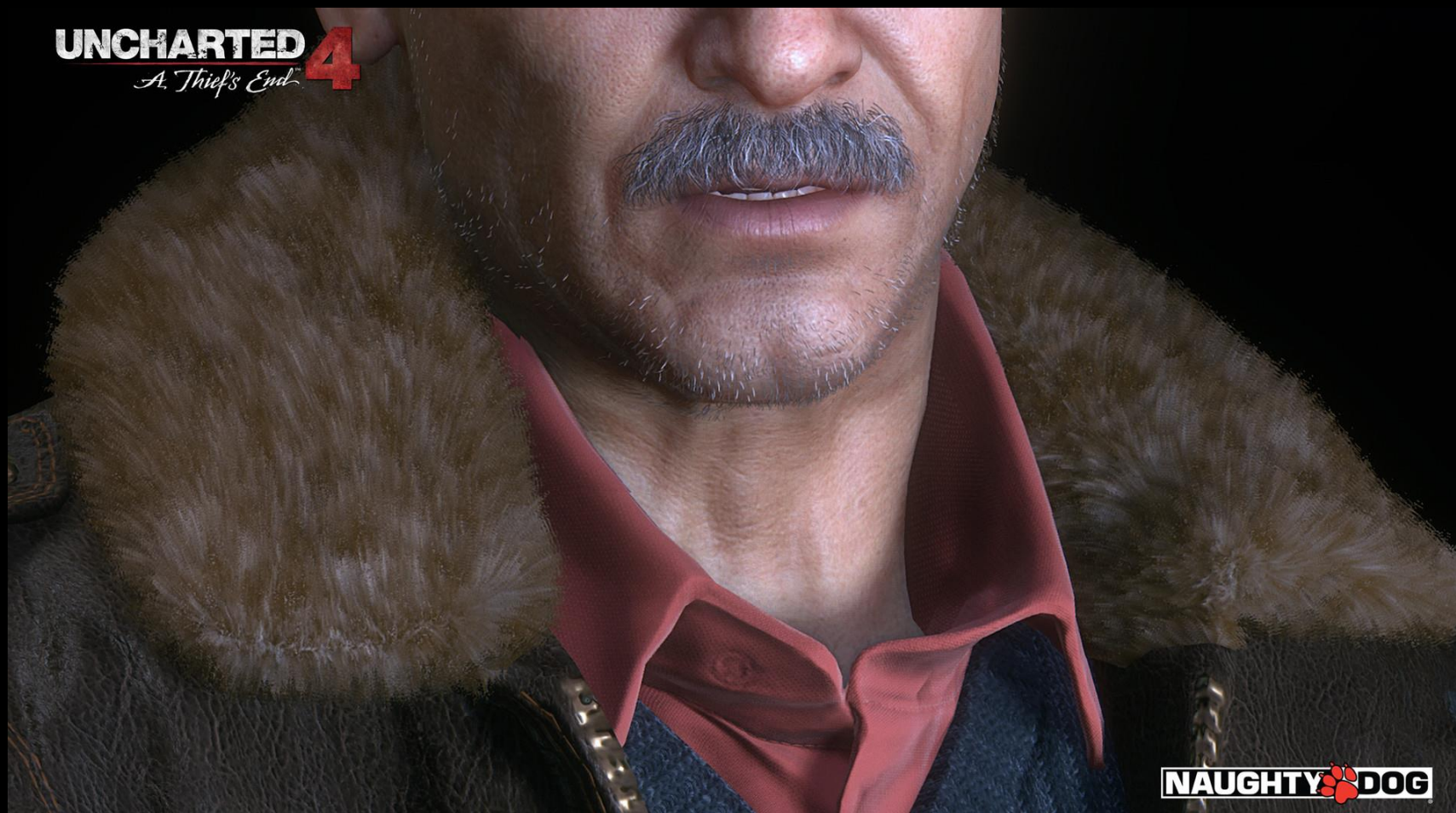


Added loose "hair cards" to break the silhouette

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# Can we use it for real-time fur ?



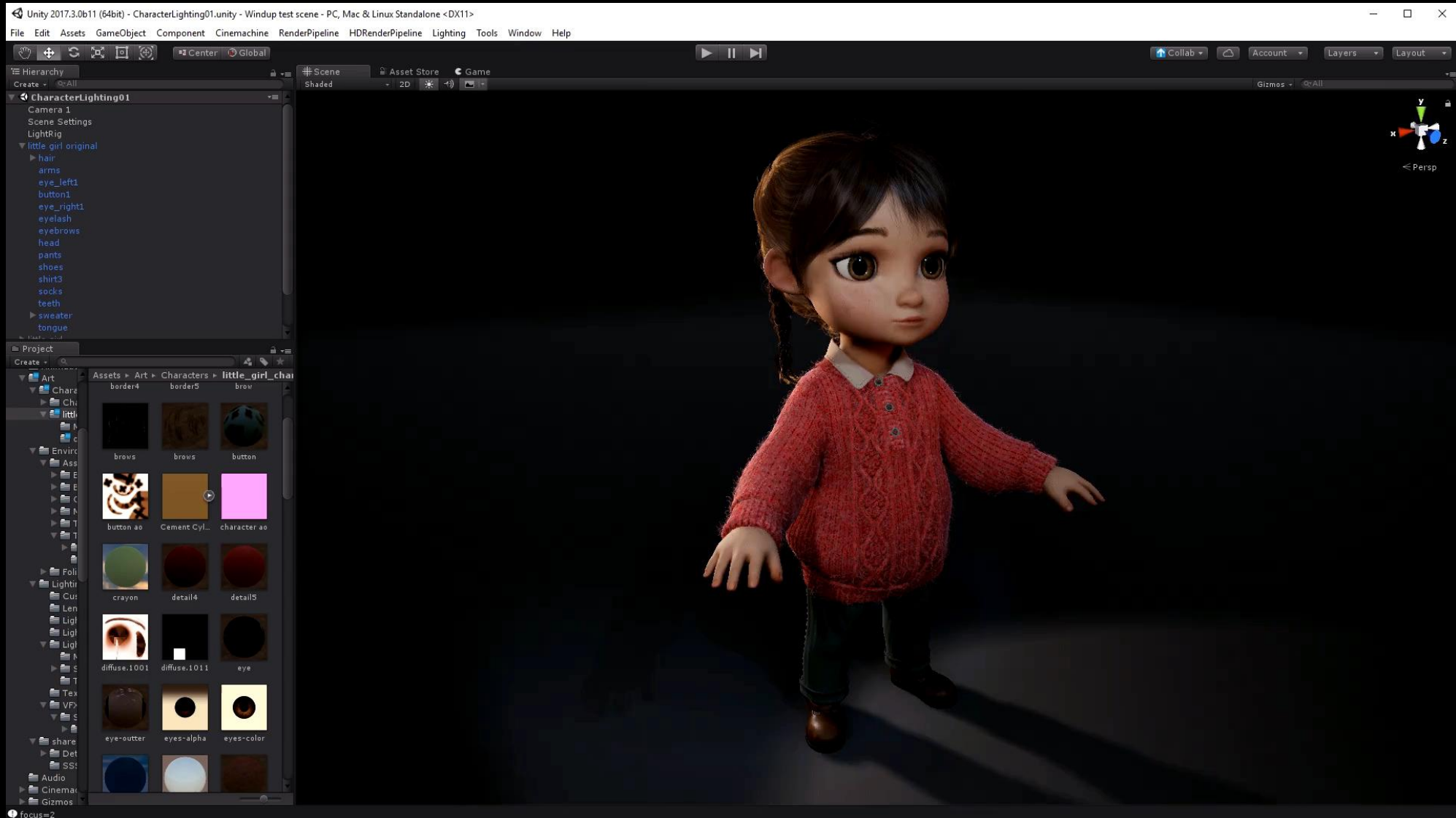
Fur shells for real-time fur

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# Completed final character



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Build the world



# Block Meshes



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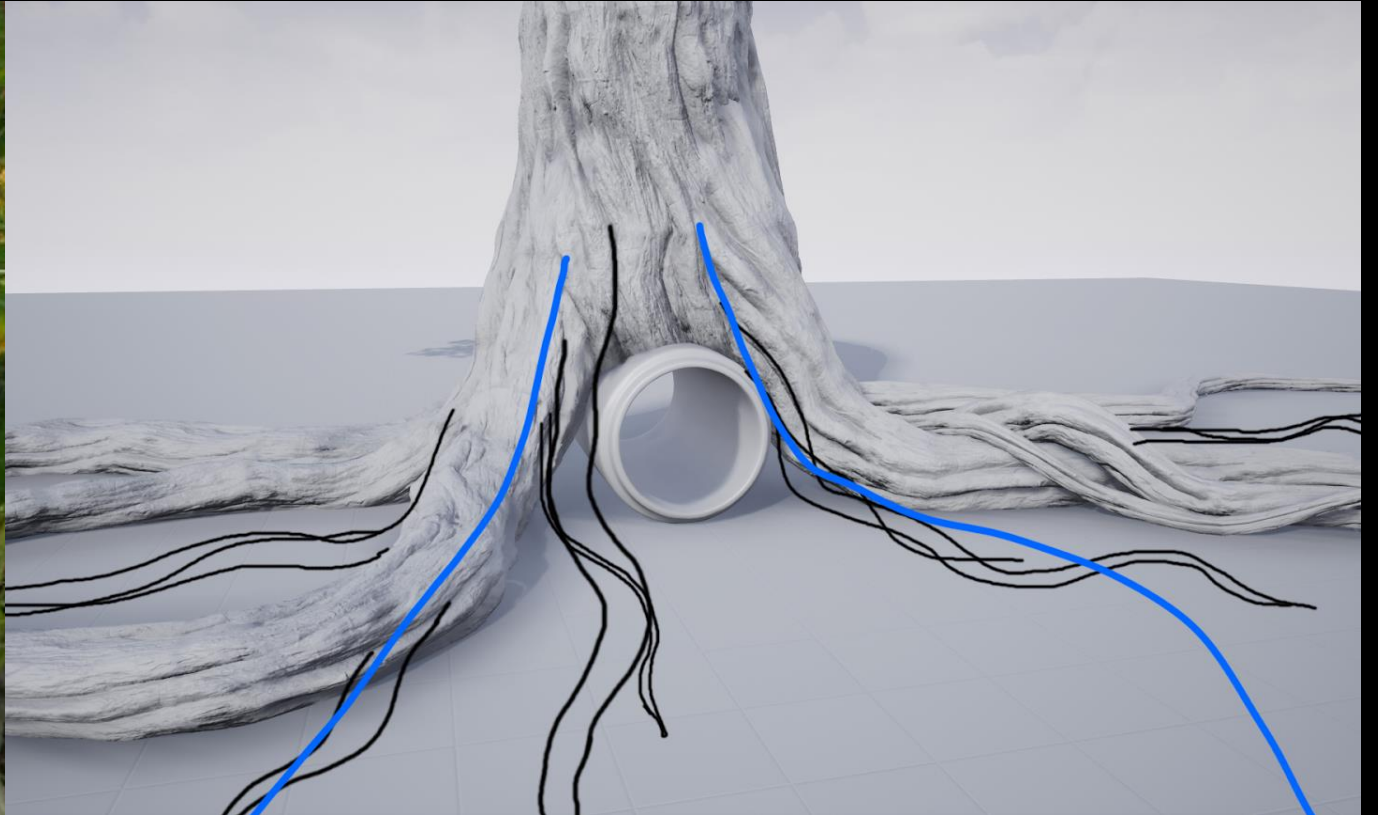




# Adding details



Carving patterns



Exploring the root flows



# Tessellation shaders



We also did some test of a tessellation shader for the ground

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# Kid's graffiti



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# Completed final environment

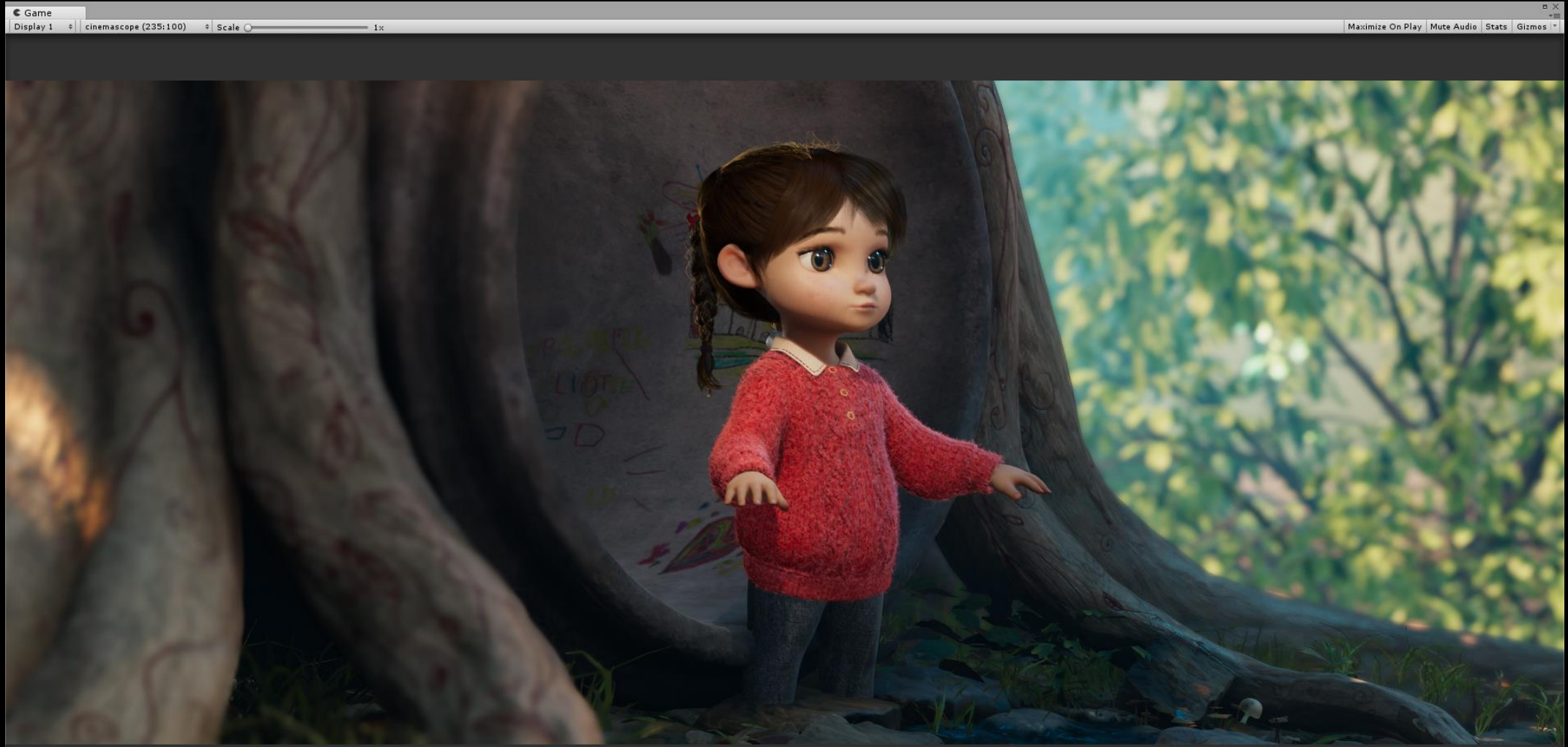


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# Combine character and scene



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Per shot lighting



# Final Captures



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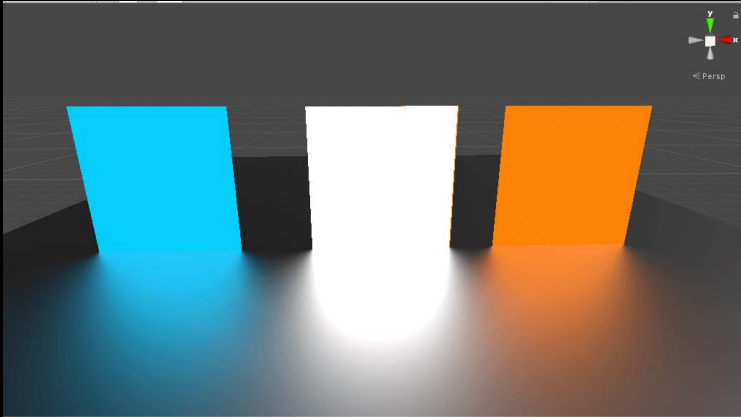


# Special thanks

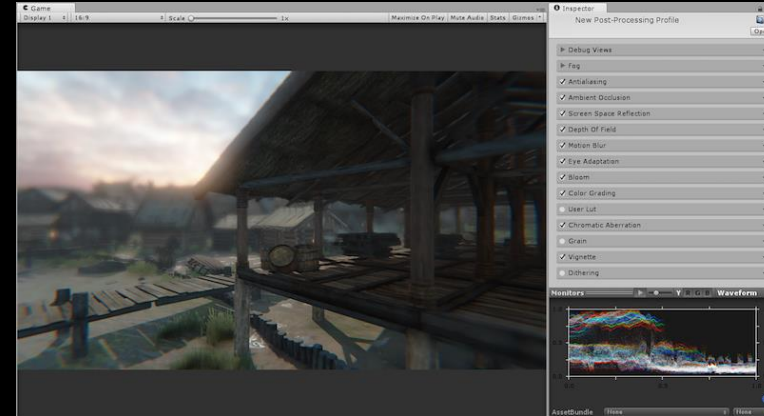
- Laurent Harduin
- Jacob Norris
- Colin Thomas
- Melissa Chou
- Sebastien Lagarde
- John Parsaie



# Special tools



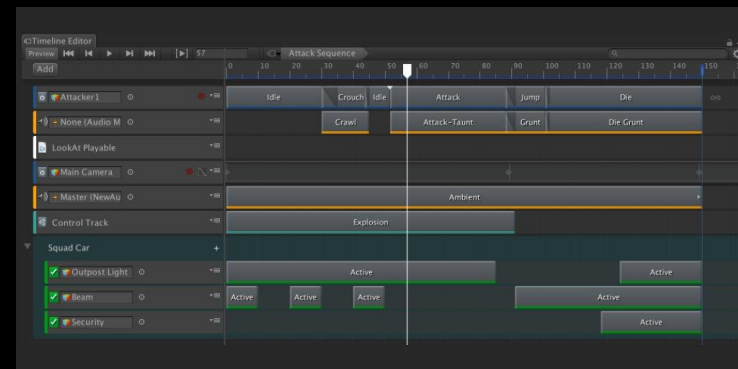
HD Render Pipeline



Post Processing Stack



Cinemachine



Timeline

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# Special Bugs



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Q&A