

# Critical thinking

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## About My Concept (Background Story):

Although the overall work is constrained by animation and camera perspectives, making the story seem less prominent, I still created a backstory for my character. It's based on the ancient Chinese Lantern Festival, which occurs a few days after the Spring Festival. People hang numerous lanterns on the streets, perform carp lantern shows, and children play with rabbit lanterns. Hence, my scene incorporates elements that showcase the festival's characteristics, such as lanterns, carp lanterns, rabbits, and winter plum blossoms.

The poet Xin Qiji has immortalized this festival in his poetry.

东风夜放花千树，更吹落，星如雨。

The east wind at night has flowered a thous-and trees. Bringing showers of glowing stars down streets.

宝马雕车香满路，凤箫声动，壶光转，一夜鱼龙舞。

Fleeting our scented chariots and stately steeds. Phoenix-cooing flutes resounding. Jade-pot-flashing lanterns revolving. Dolphins and dragons are dancing away. All night long it's bright as day.

众里寻他千百度，蓦然回首，那人却在，灯火阑珊处。

Far and near, among the crowds surging,

Tens of thousands of rounds for one I've been searching;

Only on a glance cast backward do I behold: There she is, where lights are burning so low!

Within this setting, one of the activities is lantern riddle guessing. Riddles are written on paper and hung from tree branches. Those who guess correctly can take the riddle down and receive a reward. Therefore, my character is the one setting these riddles. Her line is: "Commoners who guess the riddles correctly will have their wishes come true in the coming year." The term "commoners" here signifies her extraordinary status, and the phrase "wishes come true" hints at her special abilities.

Regarding the character design, she appears as a young girl but has lived for a thousand years. She has a clear and playful personality. Due to her unique constitution and abilities, she stands out from ordinary people, unbothered by the cold in her short-sleeved cheongsam even on snowy days. The rabbit beside her was transformed into a spirit out of her boredom, accompanying her for centuries.

A passerby's line is: "I've heard that our city's lord has been meddling in people's romantic affairs for thousands of years. Do you want this blessing?" This reflects the girl's mischievous nature. Although she claims to have the power to fulfill people's wishes, she enjoys pairing up men and women, sometimes forming perfect matches and sometimes creating laughable mismatches. Some citizens are skeptical about guessing the riddles, but many single young people eagerly participate in this matchmaking game.

My work depicts a scene from the Lantern Festival, specifically the lantern riddle guessing. It's also a beautiful blessing, wishing everyone who sees it success in their endeavors and a prosperous future.

## Before starting the project:

Initially, I intended to adopt a more photorealistic style. However, after spending two months studying character design, I found the results rendered by Maya to be unsatisfactory. I concluded that I might not yet possess the skills necessary to handle next-generation photorealistic characters and scenes. This is because realism requires more lifelike materials and smoother animations; otherwise, the visuals can become unappealing or even evoke the uncanny valley effect.

Consequently, I decided to pivot in style. I researched numerous well-known animation styles, such as those of Pixar. Their works are characterized by richly colored visuals, requiring a solid foundation in conceptual design. Moreover, the design complexity of characters often surpasses their production complexity. Most importantly, animation production is a critical aspect of these styles.



Taking "Toy Story" as a reference point

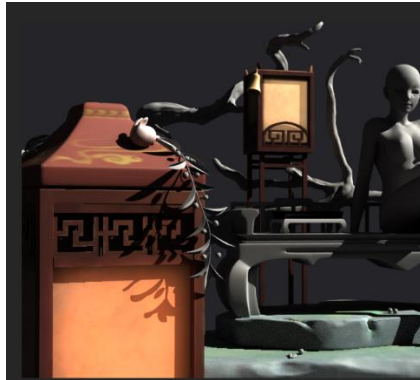
After comparing various 3D animation styles from around the world, I chose to adopt a style akin to the film "White Snake." Its distinguishing feature is that the character models and materials are not entirely photorealistic. However, other elements like hair, clothing, and scenery are rendered with more realistic materials. The overall rendering style then softens

this realism, creating a perception akin to aesthetically pleasing animation.

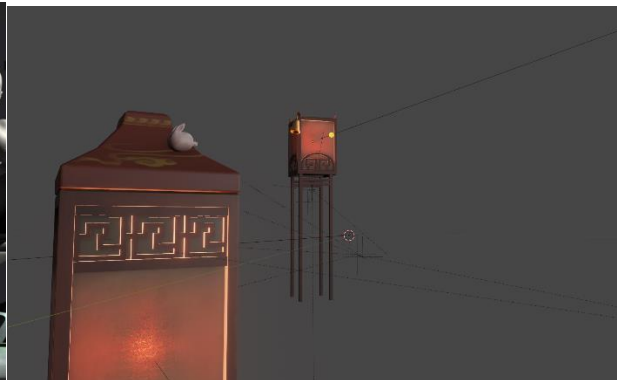


The With Snake

To achieve this effect, I embarked on redesigning my characters and applying new materials. In order to test the rendering outcomes, I compared Maya and Blender. Ultimately, I found that Blender's output was less photorealistic and more aligned with the animated effect I was seeking. Consequently, I migrated the entire scene to Blender.



Maya



Blender

## Production Process and Challenges Encountered:

I then began creating my characters.

**Zbrush Sculpting:** I started with a basic DAZ model and adjusted it in ZBrush to my desired appearance. The DAZ output tends to be more photorealistic, so I primarily modified it towards a more youthful, cartoonish direction. I increased subdivision levels and polygon count to sculpt the details I wanted, such as double eyelids.

**Painting Materials in Substance Painter:** Since I had exported high and low poly models from ZBrush, I baked the high poly onto the low poly, adding an AO layer to naturally achieve a pinkish, three-dimensional look. I then detailed specific areas, mainly the eyes, similar to applying makeup. Notably, I wanted her makeup to be shiny, so I set the roughness of the eyelids and lips to the lowest. Also, I didn't use realistic skin texture maps (nor did I add skin texture brushes during sculpting) because I wasn't aiming for photorealism.

**Creating Hair in Blender:** Earlier, when trying a realistic style, I used XGen for hair. Blender's hair system is roughly similar but more streamlined. The challenge I faced was with the hair material; using the Cycles renderer made the hair appear sparse, so I switched back to the Eevee renderer. However, this made the hair less realistic. This step required patience, dragging each point to the correct position.

**A-Pose Rigging:** I used a Blender plugin for rigging and conducted tests. Fortunately, my animation wasn't complex, and there weren't many areas needing weight painting adjustments. However, I encountered an issue: the completed hair wouldn't bind. I duplicated the head and bound it together, hiding the duplicate, which allowed the hair to move with the model.

**Animation:** The envisioned animation was simple, but Blender was already consuming substantial memory, preventing smooth playback. Each frame took several seconds to load. So, I had to keyframe based on intuition, then export as FBX to Maya or a new Blender project for checks, repeating this process.

**Clothing in Marvelous Designer (MD):** The clothing patterns were straightforward. I imported an A-pose character, created the clothing, and adjusted UV in MD after confirming the fit, then exported to Substance Painter for texturing.

**Hair Dynamics and Cloth Animation:** With the animation, hair, and clothes ready, the next step was to synchronize their movements. I used Blender's hair dynamics, tweaking parameters to achieve a realistic but not overly soft motion. For the clothing, I imported the character animation as an Alembic file and let MD simulate it. I used pins to prevent excessive movement of the dress's hem.

**Creating and Arranging Scene Models and Materials:** Since I had already laid out the basic blocks, this step involved refining models and applying materials. After reviewing the overall scene, I felt the models were insufficient and the background too empty. Following consultation with Mannos, I decided to blur some lanterns in the background.

**Lighting:** At this stage, most elements were complete, but the scene still appeared flat. I first lit all glowing objects, then added key light, fill light, and rim light to the character. I aimed

for a broad range of light to cast an orange hue on various objects.

**Rendering and Compositing:** Initially, I used Blender's built-in depth of field effect but found some areas uncontrollable. Therefore, I rendered multiple layers and adjusted the blur in Nuke during post-production.

## Challenges Encountered:

**Time Management:** Although I had set a schedule for myself and initiated it as planned, it did not progress as expected. As mentioned earlier, I spent a considerable amount of time and effort in the early stages exploring various styles. While working on character models, I experimented with many styles, leading to numerous discarded models and texture maps. Initially, I hadn't settled on a style, resulting in both figurine-style and next-generation photorealistic drafts, which looked unsatisfactory in Maya. Initially, I used Maya's XGen for braids, but the results were not satisfactory. It took about two months to finalize the character style, disrupting my timeline and forcing me to simplify my scene shots.

**Focus on Modeling:** My primary focus has always been on modeling, but I still need to improve my skills in texturing. For this project, I used Blender's Eevee renderer with a fancy style, but a more refined result could be achieved by rendering realistic materials in a cartoon-style engine. To further my learning, I plan to create a completely realistic skirt in my next project, not only to advance my skills in Substance Painter (SP) but also to learn Substance Designer (SD) for embroidery textures.

**Flat Main Scene Design:** I feel the main scene design is somewhat flat, possibly because the initial design focused on highlighting the character. However, using a larger perspective and a more complex background might accentuate the character and add more dynamism to the scene. This is an aspect I will consider more in future designs.

**Animation:** Although animation is not my primary focus, I found it challenging, and the final animation was somewhat rigid. I recognize that I might not excel in every aspect of CG, so for my next project, I plan to collaborate with an animator.

## Directions for Improvement:

**Identifying the Right Development Path:** I believe my focus should primarily be on creating aesthetically pleasing character models. Therefore, I need to practice sculpting characters in various styles, not limiting myself to specific cartoon styles.

**Allocating Time to Learn UE Basics:** This semester, I've seen many impressive Unreal Engine (UE) works, which are quite inspiring. However, I must remember that for me, UE is a rendering tool. I first need a solid aesthetic sense to shape characters and scenes effectively before utilizing the tool to its full potential.

**Detailed Study of Materials:** It's crucial to deepen my knowledge of Substance Painter (SP) and Substance Designer (SD). I believe creating a photorealistic skirt in my next project is an excellent practice to achieve this.

**Maintaining a Balanced Mindset and Patience:** Being a CG artist is a continual process of learning and accumulation. Not everyone is innately gifted. Only through diligent study, practice, and aesthetic enhancement can one create better works.