



CS180/280A Fall 2025 Project 0

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✍️ Part 1: Selfie: The Wrong Way vs. The Right Way

Description & Explanation:

- 📷 As shown below, the left image was taken from a distance of around 200 cm using a focal length of 84mm, while the right image was captured from a much closer distance of around 20 cm using a focal length of 14mm. The framing was adjusted so that the size of the face appears roughly the same in both images.
- 🔍 Although the face size remains similar in both images, there are two significant visual differences caused by the change in focal length and camera distance:

1. Facial distortion:

- ✓ In the left image (84mm, 200cm), the facial proportions look natural and undistorted because shooting from a farther distance with a longer focal length reduces perspective exaggeration.
- ✗ In the right image (14mm, 20cm), the face appears distorted: the nose and central features look larger, while the ears and edges of the face appear stretched.

2. Background appearance:

- 📍 In the left image (84mm, zoomed in), the background elements (e.g., umbrellas, chairs, walls) appear closer together. In the right image (14mm, no zoom), the background appears much wider and more spaced out due to the wide field of view.

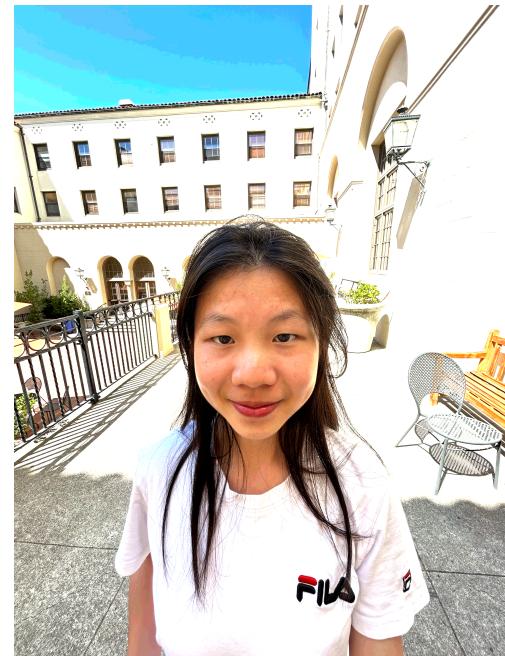
Explanation:

When shooting from a close distance with a lens with shorter focal length (14 mm, 20 cm), the relative depth differences between facial features (e.g., nose, eyes, ears) become significant, causing the nose to appear larger and the edges of the face to stretch. In contrast, shooting from farther away with a lens with longer focal length (84 mm, 200 cm) reduces these relative depth differences, making the facial proportions look more natural. Additionally, when keeping the face the same size in the frame, using a longer focal length from farther away compresses the

background, making it appear closer and fuller, while a lens with longer focal length from a closer distance creates a wider field of view, making the background look more distant and spacious.



84mm 200cm



14mm 20cm

🏛️ Part 2: Architectural Perspective Compression

Description & Explanation:

As shown below, I first zoomed in and took the left image using a focal length of 51mm from a farther distance. Then, I walked closer along the hallway and captured the right image without zooming, using a focal length of 26mm.

The red marks highlight the width of the corridor at the far end, which we compare between the two images to analyze perspective effects. Although the apparent width of the corridor at the far end is roughly the same in both images, there are two significant visual differences caused by the change in focal length and camera distance:

1. Size of the distant trees:

In the left image (51mm, zoomed in), the trees in the background appear bigger compared to the right image (26mm, no zoom). This happens because using a longer focal length from a farther distance compresses depth, reducing the relative

size difference between near and far objects.

2. Number of visible columns:

- 🏛️ In the left image (51mm, zoomed in), more columns on both sides of the hallway are visible, while in the right image (26mm, no zoom), fewer columns are shown.



Zoom in, 51mm



Without zooming in, 26mm

🎥 Part 3: The Dolly Zoom

📝 Description & Explanation:

While the football player keeps roughly the same size in the picture, the background seems to become "larger" when I moved the camera back while zooming in.



🎬 Dolly Zoom with 13 frames

⚙️ Part 4: AI acknowledgement

I used a template of html from CS 184, and used chatGPT to help me add emojis 😊