Materials and lighting

A look-development guide for two humans and two dogs in a seamless white studio.



Cocoa jacket & white pup

IMG_4092.PNG



Dove hoodie & apricot pup

IMG_4094.PNG

USING THE ATLAS

Read the sampled pixels

Lettered dots mark 3 × 3-pixel median RGB samples from the 1024 × 1024 originals. Coordinates run from the top-left. Both PNGs are untagged; interpret the reported hex values as display sRGB.

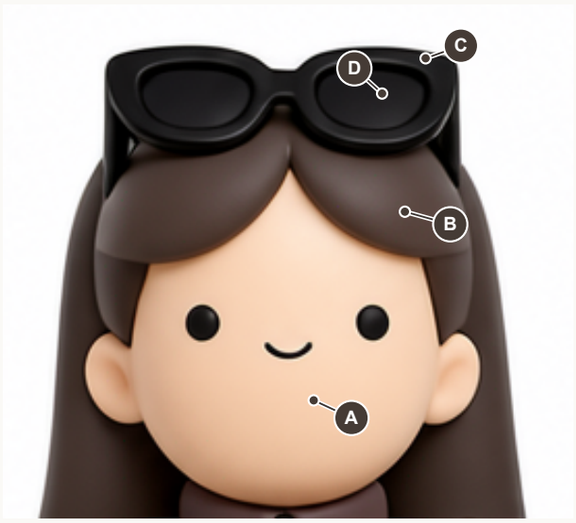
Build a surface in light

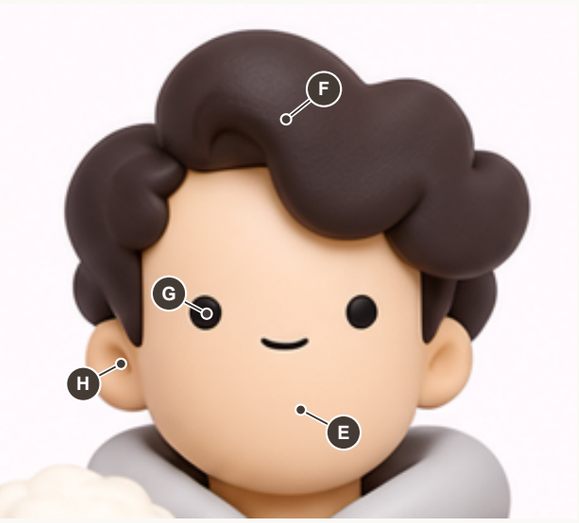
The hex chips include illumination, shadow and the source image’s tonal treatment. The separate base colors and roughness values are suggested reconstruction settings. Tune them from a locked front camera.

Faces / Outerwear / Footwear / Coats / Lighting / Web handoff

Face, hair and eyewear

Use broad, continuous gradients on the faces. At this scale, the eye spacing, center part and swept forelock carry more likeness than fine pores.





Cocoa portrait

A	Cheek	#F8D1B2	522, 219
B	Chestnut lock	#5C4A43	566, 128
C	Acetate rim	#232324	576, 54
D	Smoke lens	#211F22	555, 71

Dove portrait

E	Cheek	#F7D0B1	520, 218
F	Dark wave	#524140	513, 79
G	Button eye	#171312	475, 172
H	Inner ear	#CC9468	434, 196

SHADER STARTING POINTS

Peach skin and ears

Start at #F4BD91, roughness 0.56 and metallic 0. A shallow, warm ear hollow can take #E5A87F. Let light shape the cheek under each eye and the soft edge of the chin.

Molded hair

Use #412D25 for chestnut and #302122 for the dark wave. A 0.65 roughness and fine tangent grain around 0.22 preserve the form of each large lock.

Eyes and smile

Use #191617 at roughness 0.62 for the human eye buttons. Keep the small crescent #241918 at 0.77. A compact, muted catchlight leaves most of each eye dark.

Acetate and smoke

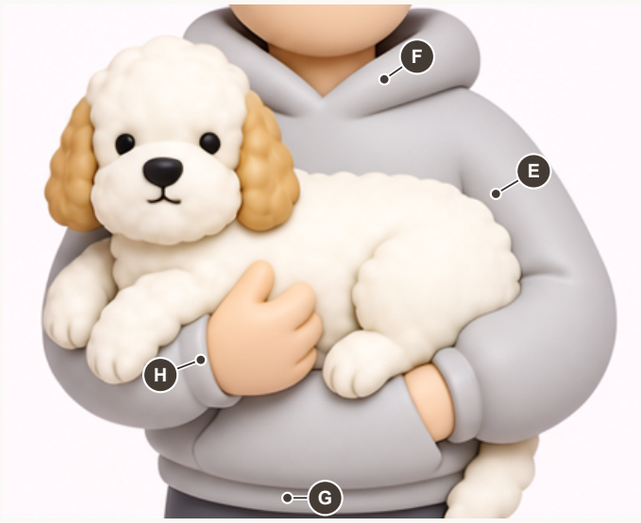
Begin with frame #121113 and lens #242127, both at roughness 0.39 and metallic 0. A modeled rim and recessed lens produce the narrow black band above the brow.

MATCH CHECK At full-body size the eyes stay round, the cream cheek remains luminous and the frame reads separately from both the lens and hair.

Dove fleece and cocoa jersey

The hoodie has an overlapping hood, rounded sleeves and a gathered binding. The track jacket has a compact stand collar and a small, bright zipper pull.





Cocoa portrait

A	Cocoa shell	#604645 · 454, 343
B	Silver pull	#D5D4D4 · 507, 291
C	Digit / skin	#EFBF9C · 498, 467
D	Collar shade	#473130 · 471, 283

Dove portrait

E	Fleece sleeve	#CDC8C9 · 631, 352
F	Collar fold	#D9D4D5 · 555, 274
G	Waist binding	#B0A8A9 · 489, 559
H	Cuff	#D3CCCD · 430, 465

SHADER STARTING POINTS

Cocoa track jacket

Start at #513A3C, roughness 0.70 and normal strength 0.105. Use #4B3436 and roughness 0.72 at the cuffs. Keep the front panel smooth enough for the zipper to register.

Dove hoodie

Start at #C1BBBD, roughness 0.83 and normal strength 0.155. For ribbing, use #B9B2B6 and normal strength 0.23. The hood needs a broad rolled edge with shadow inside the overlap.

Zipper hardware

A rounded pull needs its own face and bevel to catch a highlight. Try #C9C4C5 with roughness 0.34 and metallic 0.52. Place the silver strip inside a narrower dark tape recess.

Fold scale

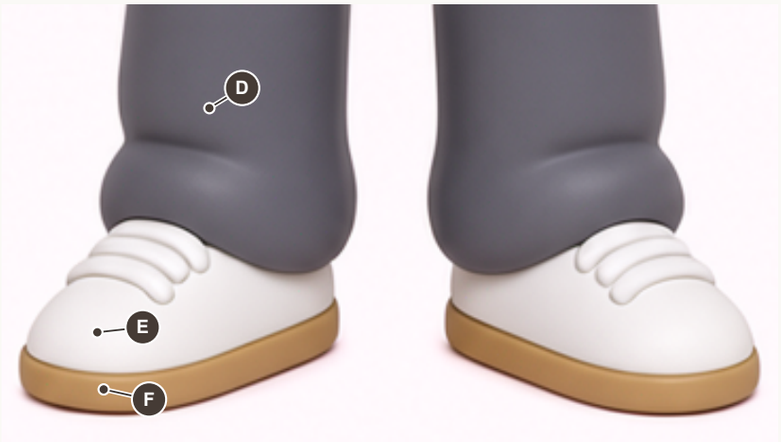
Shape the padded elbow and the compression at the wrist before adding a textile map. Map the subtle weave along each sleeve and around the waistband; keep the pattern quiet in the front portrait.

MATCH CHECK Check the hand against both the sleeve and dog. A visible cuff edge and short contact shadow should distinguish all three forms.

Trousers, laces and soles

The hem overlaps the top of each sneaker. Broad folds at the ankle and an exposed band around the outsole create the break between fabric and leather.





Cocoa portrait

A	Black trousers	#26262B	431, 852
B	Chalk leather	#FDFBF9	391, 934
C	Off-white sole	#F3EEE9	399, 961

Dove portrait

D	Graphite trousers	#6A6670	427, 828
E	White upper	#F8F4F5	374, 934
F	Gum sidewall	#C49565	377, 961

SHADER STARTING POINTS

Wide-leg twill

Use #242328 / roughness 0.79 for the dark pair and #514F57 / 0.83 for graphite. Begin at normal strength 0.21 and 0.23 respectively. A diagonal rolling hem should remain visible at full-body scale.

Leather and laces

Try upper #F4EFEB at roughness 0.62 and lace #F8F4F0 at 0.70. Give each lace thickness and a curved line across the vamp so its lower edge catches a narrow shadow.

Cupsole bands

Use #E1DCD4 for the cocoa character’s pale rubber and #C79A68 for the hoodie character’s tan gum. Roughness near 0.81 keeps the sidewalls matte around the toe.

Construction in the unseen views

The portraits establish the front height and toe volume. Heel wrap, tread and rear seams are inferred. Continue the sidewall around the heel and keep its thickness consistent during a turn.

MATCH CHECK The white upper, pale outsole and white floor all retain visible boundaries. The gum band stays warmer and darker than the leather above it.

Two coats with different color

Build the curl masses into the crown, cheek and ear silhouettes. A fine normal layer adds a velvet nap between the larger sculpted lobes.





Cocoa portrait

A	White crown	#FEFCF9 · 605, 311
B	Drop ear	#F1EAE3 · 669, 371
C	Muzzle	#F5EEE6 · 598, 384
D	Nose	#4F4B4D · 617, 348

Dove portrait

E	Cream crown	#FFFBF4 · 409, 279
F	Apricot ear	#DDA864 · 473, 343
G	Muzzle	#EFE1D4 · 385, 356
H	Nose	#1E1A1A · 404, 338

SHADER STARTING POINTS

White pup

Begin at #FFF8EE / roughness 0.89. The crown is broad and puffy, with ears and muzzle close in color. Vary the curl size at the jaw to preserve separation from the ears.

Apricot pup

Use #FFF0DB / 0.88 for the coat and #D69D53 / 0.86 for the ears. Group the hanging ear curls into longer rounded clusters. The warm ear should retain a darker interior fold.

Noses and bead eyes

Start the nose at #251F22 / 0.39 and eyes near #1E1717 / 0.32, both metallic 0. The tiny highlight and dark lower lip establish the muzzle direction.

Coat depth

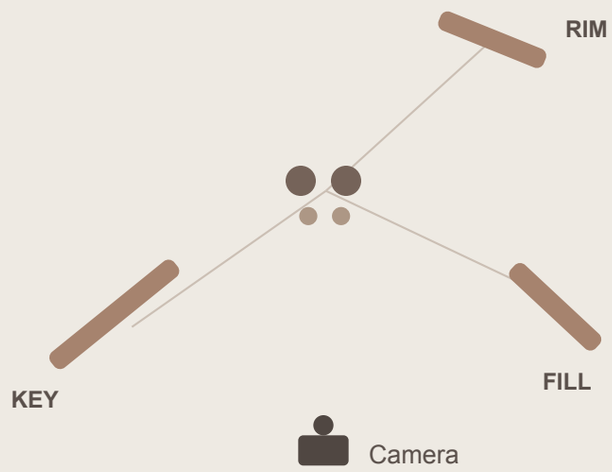
Start with normal strength 0.26 and sheen weight 0.13. Give the cheeks a forward bulge and soften the transition into the muzzle. The belly, hocks and far-side curls require inferred geometry.

MATCH CHECK In a grayscale thumbnail, both muzzles still project forward and separate from their ears. A three-quarter turn should reveal round clumps and a readable nose.

Soft light on a white sweep

The original portraits show a very bright ground, short shadows under the shoes and broad highlights across the faces. This three-source rig is a reconstruction.

PROPOSED RIG / TOP VIEW



Lighting balance

Start with an area key 35-45° off camera left and raised above the heads. Aim it at chest height. A source about 1.5-2 human heights across gives the forehead and curls a wide highlight.

Place a broad fill on the opposite side. Start at roughly half the key's illuminance at the face. Add a soft rear light until the dark hair edge separates. Keep the white dog's lit edge below clipping.

MEASURED REFERENCE ANCHORS

Cocoa portrait

Empty sweep	#FEFEFF · 70, 70	
White crown	#FEFCF9 · 605, 311	
Sole contact	#E6E1DD · 407, 976	

Dove portrait

Empty sweep	#FFF9FD · 70, 70	
Cream crown	#FFFBF4 · 409, 279	
Sole contact	#B78A5D · 396, 969	

MATCH THE PHOTO IN THIS ORDER

Set the exposure

Match the face midtone and gray sleeve first. Compare the three-channel medians in lit and shaded areas after the display transform. Preserve detail on the white coat and shoes as the floor approaches white.

Then shape the shadow

Keep a diffuse, warm contact directly under the outsole. Check for a short shadow where fingers support the pup and where the hood overlaps the neck. Increase source size to soften the shadow boundary.

MATCH CHECK At thumbnail scale, the white pup has a continuous edge against the floor and the dark hair still shows the shape of each wave.

Carry the look into the browser

Use one frozen pose, one camera and one crop in both renders. Compare differences in light and color before changing the character geometry.

Surface	Blender authoring	glTF / Three.js review
Base color	Paint albedo in sRGB and enter the suggested hex through a color-managed picker. Keep the original image chips as display targets.	glTF baseColorTexture uses the sRGB transfer function. RGB factors and vertex colors operate in linear space. Let GLTFLoader set texture color spaces.
Cloth and coat	Give the cloth and fur real UVs. Pack the tangent normal tiles, set them to Non-Color and connect via a Tangent Space Normal Map node.	Keep UVs, normals and color attributes during export. Check the GLB for normalTexture and, for the fur, COLOR_0. Inspect the nap while orbiting under a fixed light.
Metal / roughness	Use Principled BSDF values or a packed data texture. Map green to roughness and blue to metalness. Keep the packed texture in Non-Color.	Retain the green/blue channel assignment. Compare the broad fleece highlight with the compact zipper glint under the same key.
Skin and hair	Keep subsurface weight low on skin. Use broad sculpted masses and a restrained grain for hair. Check the silhouette from the side.	Core metallic-roughness carries the diffuse and specular approximation. Recheck warmth at the ears; Blender’s subsurface scattering can change with renderer choice.
Tone and output	Record the Blender view transform, look and exposure with the review render. Compare dark trousers, cream coat and a neutral floor patch.	Use a linear working space and sRGB display output. Choose the browser tone mapper deliberately. Tune exposure against the same patches before adjusting albedo.

TECHNICAL REFERENCES

Blender Manual glTF import and export

Khronos Group glTF 2.0 material model and texture encodings

Three.js Manual Color management and display output

Portraits supplied with the project. Measurements and shader starting points apply to this cast.