

Mock-up Blending Images Comparison

Starbucks Coffee and Watering can

Object A and B

<i>Object A</i> The Starbucks Coffee	<i>Object B</i> Watering Can
	

Blend Results

Ours	Profession	Operations	Problems
		• Segment starbucks cup • Segment watering can • Scale starbucks cup • Position starbucks cup	In the professional image: • The watering can is whiter than it ours. I think the artist whitened it to look more like the Starbucks cup • The artist also “shortened” the starbucks cup to make it match the proportions.

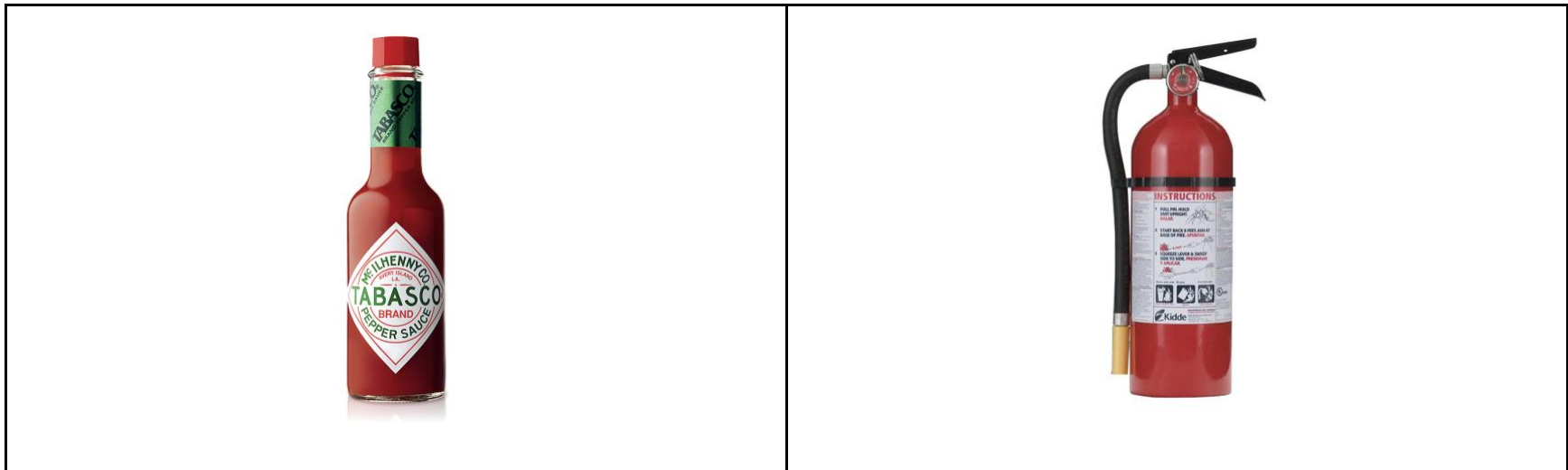
Version 1			• The 'oval' on the coffee cup is wider than it on original • The cup is also rotated to match the rotation of the watering can
 Version 2		• Adjust color of watering can. ◦ Blend colors of the two objects: select some of the white of the cup and blend it with the grey of the watering can. • Segment out the 'oval' of the cup • Scale the 'oval' and overlay it on the original cup	In our image: • Starbucks cup needs rotation
 Version 3		• Scale height of the starbucks cup • Segment the starbucks logo with copyright sign • Scale the starbucks logo • Position the starbucks logo slightly left on the logo segmented cup • Arrange logo on the top layer of the image • Crop a square only containing the shadow	In our image: • I tried to shift the location of and scale the logo to make it looks like 'rotate slightly' but some slight color difference still can be observed. • The location of nozzle is lower than that in professional image.

		around the right part of logo from the cup • Overlay the square over the right half of logo on the logo segmented cup	
 Version 4		• Position the nozzle	In professional image: • The starbucks logo seems more natural on a rotated water

Tabasco and Fire extinguisher

Object A and B

<i>Object A</i> Tabasco Bottle	<i>Object B</i> Fire Extinguisher
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Blend Results

Ours	Profession	Operations	Problems
 Version 1		• Segment tabasco bottle (without cap) • Segment fire extinguisher handle and tube • Segment black belt of fire extinguisher • Position tabasco bottle • Position extinguisher handle • Scale tabasco • Scale extinguisher handle • Scale length of the belt • Position the belt	In the professional image: • The belt is not horizontally straight but is slightly winding. • The color of pressure gauge is white (I don't think this is a big issue since the artist seems use a totally different fire extinguisher handle). • The tabasco is with Cap.

 Version 2		• Segment tabasco bottle (with cap) • Arrange the tabasco bottle to the bottom layer of the image • Curve the belt	In our image: • The pressure gauge is not at the center of the cap of the tabasco bottle • The pressure gauge does not fully cover the cap of the tabasco bottle
 Version 3		• Select the pressure gauge • Scale the pressure gauge • Position the pressure gauge	

Note: The artist uses a new image of the fire extinguisher handle, tube and pressure gauge here to let the color of pressure gauge match the color of the logo of the tabasco. I don't think this is a crucial factor that will affect the blending two images together, so in our blending process, we still use the red pressure gauge.

The globe and Ice Cream

Object A and B

Object A The Earth	Object B Ice Cream
	

Blend Results

Ours	Profession	Operations	Problems
 Version 1		• Segment ice cream and melting “drips” from the cone. • Segment cone from the ice cream and “drips” • Crop a square of the earth image • Use the square of the earth image as the texture image and train	In professional image: • The shape of ice cream is more sphere-like. • The patterns on the ice cream is alike the texture on the earth. But ours is too white to see the earth texture. • The color of ice cream is majorly dark blue but ours is white.

		FST • Transfer the texture of earth to ice cream part of B image. • Overlay the earth textured ice cream with “drops” on the cone	• The ice cream looks like oil paint, but ours looks more like color pencil sketch.
 Version 2		• Scale the ice-cream (in one direction) to fit the sphere shape • Adjust colors of the object: ○ Increase saturation of ice cream to have more saturated blue and green. ○ Increase the degree of contrast to make color blue and green more obvious.	In our image: • The color of the ice cream is still too white. The professional image has nice blues and earth colors.

 Version 3		• Blend colors of the two objects: ◦ Adjust the transparency: reduce transparency of ice cream ◦ Overlay the earth over the ice cream so the earth colors show through. • Segment the overlap of the earth and ice cream. • Location the overlap back to the cone in version 2	In professional image: • The texture of the professional looks smooth, more like oil paint. Ours looks too rough, more like pencil sketch.
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Gray Lego and Gray Diamond

Object A and B

<i>Object A</i> Lego Brick	<i>Object B</i> Diamond Ring
	

Blend Results

Ours	Profession	Operations	Problems
		• Segment lego brick • Crop a square of the diamond image • Use the square of the diamond image as the texture image and train FST • Transfer the texture of diamond to lego brick • Scale lego brick • Rotate lego brick • Position lego brick	In professional image: • The lego shows the pattern of the diamond, but the texture of ours does not look like the diamond at all. • The rotation angle of lego matches that of the ring, however in our image they don't. • The protruded part of the lego brick is circle-like but after FST, it becomes polygon-like.

Red Lego and Red diamond

Object A and B

Object A Lego Brick	Object B Diamond Ring
	

Blend Results

Ours	Profession	Operations	Problems
		● Segment lego brick ● Crop a square of the <u>white</u> diamond image ● Blend colors of the two objects: ○ Adjust the transparency: reduce transparency of square of diamond image ○ Overlay the square of diamond image over the lego so the lego colors show through. ○ Adjust brightness: increase the brightness of diamond image ○ Adjust saturation: increase saturation of diamond image ○ Adjust contrast: increase contrast of diamond and image ● Crop the overlap ● Scale the overlap ● Position the overlap	In our image: ● The protruded parts of the lego brick are very vague. ● The diamond needs rotation to match the rotation of the ring. ● The gloss of diamond is still not as obvious as that of professional one.

Apple and hamburger

Object A and B

Object A Apple	Object B Hamburger
	

Blend Results

Ours	Profession	Operations	Problems
 Version 1		• Segment bread buns from hamburger • Segment meat part from hamburger • Segment stem and leaf from apple • Use the square of the apple image as the texture image and train FST • Transfer the texture of apple to buns of the hamburger	In professional image: • The shape of 'apple hamburger' is more like the shape of an apple, while ours is more like a hamburger, which is wider and shorter.

		• Position bread buns • Scale stem and leaf • Position stem and leaf	
 Version 2		• Scale the 'apple hamburger' inversion 2	In professional image: • The color of 'apple buns' is very close to the color of bread buns -- orange.
 Version 3		• Blend colors of both bread buns <u>before</u> and <u>after</u> FST: ◦ Adjust the transparency: reduce transparency of textured buns ◦ Overlay the textured buns over the original buns so the orange from the original buns show through.	In our image: • The color of the buns is still too orange comparing to the color of buns in professional image. In professional image: • The shape of the top 'bun' is the top part of an apple, but in ours, it is just bread bun. • The gloss on the 'apple buns' are very close to that on a real apple, but our image doesn't show that gloss.



Version 4



- **Crop** top part of apple
- **Scale** top part of apple
- **Overlay** the top part of apple over the top bun in version 3
- **Segment** the overlap (apple shape) from the top bun of version 3
- **Crop** meat part and bottom bun from the 'apple hamburger' in version 3
- **Position** the apple-shaped top bun
- **Adjust colors** of the object:
 - **Increase** brightness of both buns in version 4
 - **Increase** the transparency of top bun in version 4
 - **Increase** saturation of top bun in version 4

In professional image:

- The apple-shaped buns curves at the contact surface

In our image:

- The gloss of 'apple hamburger' is very close to the gloss on an apple but still not good as that in professional image.

 Version 5		• Curve the contact surface of top bun in version 4 (in one direction)	In our image: • The color of buns still looks not quite like bread, it is a little pink.
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Orange and teapot

Object A and B

<i>Object A</i> Orange	<i>Object B</i> Teapot
	

Blend Results

Ours	Profession	Operations	Problems
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 Version 1		• Use the square of orange image as the texture image and train FST • Transfer the texture of orange to teapot	In our image: • The pattern on the teapot is more like oil paint, while the texture of teapot in professional image is exactly the texture of orange that we see in real life. • The teapot has the gloss of a piece of porcelain instead of an orange. • The teapot does not show 3D effects but is more like a 2D image. • The edge is not smooth
 Version 2		• Smooth the edges of the teapot in version 1	In professional image: • The teapot is rotated a little bit, which enhances its 3D effects in some degree.

 Version 3		• Crop a square of the orange image • Blend colors of orange image and teapot: ◦ Adjust the transparency: reduce transparency of teapot ◦ Overlay the teapot over the square of orange image so the orange from the original buns show through. • Crop the overlap	In our image: • The pattern on the teapot is still like paint not the rough texture of the orange.
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Orange and snowman head

Object A and B

<i>Object A</i> Orange	<i>Object B</i> The Head of Snowman
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Blend Results

Ours	Profession	Operations	Problems
 Version 1		• Segment merely face (no eyes, nose, mouth pipe or hat) from snowman image • Segment eyes, nose, mouth pipe and hat together from snowman image • Use the square of orange image as the texture image and train FST • Transfer the texture of orange to segmented face • Position the face	In professional image: • The color of the face is more dark orange but ours is too light. • The face displays the gloss of an orange, which enhances its 3D effect. Ours looks more flat. • There is some shadow below the hat but ours does not show that. In our image: • Some artifact appears on the right face, which is produced when applying FST.



Version 2



- **Adjust colors** of the object in version 1:
 - **Decrease** brightness of face
 - **Increase** saturation of face
 - **Increase** contrast of face

In our image:

- The shadow below the hat is not as obvious as that in professional one.



Version 3



- **Segment** the snowman head without the face
- **Segment** orange from orange image
- **Scale** orange image
- **Arrange** the orange image to the bottom layer
- **Position** orange image

In our image:

- The snowman head is too sphere while in professional one is wider at the bottom part and narrow at the top part.



Version 4



- **Segment** the snowman head without the face
- **Segment** orange from orange image
- **Warp** orange image
- **Arrange** the orange image to the bottom layer
- **Scale** orange image to fit the proportion of rest part
- **Position** orange image

In our image:

- The color of face is much brighter than the professional one.

 Version 5		• Adjust colors of the object in version 4: ◦ Decrease saturation of face ◦ Decrease contrast of face	
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Lego and Popsicle

Object A and B

<i>Object A</i> Lego Brick	<i>Object B</i> Popsicles
	

Blend Results

Ours	Profession	Operations	Problems
 Version 1		• Segment Lego brick. • Crop a square of the pink popsicle image • Use the square of the popsicle image as the texture image and train FST • Transfer the texture of popsicle to lego • Scale the textured lego • Rotate the textured lego • Overlay the popsicle textured Lego over original popsicle.	In our image: • The white parts do not look like ice. • The gloss of our image is not like the gloss of the popsicle. • The lego needs rotation.
 Version 2		• Blend colors of popsicle image in version 1 and Lego: ◦ Adjust the transparency: reduce transparency of lego ◦ Adjust brightness: increase the brightness of the popsicle ◦ Overlay the lego over the popsicle image so the popsicle colors show through.	In our image: • The ice gloss is still not obvious.

Starbucks cup and The Christmas Lights

Object A and B

<i>Object A</i> The starbucks Coffee cups	<i>Object B</i> The Christmas lights
	

Blend Results

Ours	Profession	Operations	Problems
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- Use the square of Christmas light image as the texture image and train FST
- **Transfer the texture** of Christmas light to starbucks cup image
- **Segment** starbucks cup
- **Scale** starbucks cup
- **Position** starbucks cup

In professional image:

- The starbucks has gloss of glass and more transparent, but ours is more like a cup with color pink and relatively brighter around the logo.
- The color of logo is black and very clear.



- **Segment** starbucks logo from original starbucks cup image
- **Segment** starbucks cup from original starbucks cup image
- **Segment** green part from starbucks logo
- **Overlay** the segmented logo on Christmas light
- **Scale** the logo
- **Scale** segmented cup
- **Position** the segmented cup

In our image:

- Although the light shows through, the cup still not as transparent as glass.

In professional image:

- The entire light bulb shows through clearly, while ours only the light shows through clearly.

Starbucks Logo and The Sun

Object A and B

Object A The starbucks Logo	Object B The Sun
	

Blend Results

Ours	Profession	Operations	Problems
		• Scale the logo • Position the logo • Crop the image • Replace colors ◦ Select the color needed to be replaced ◦ Select the color needed to be displayed in result	NA

Switch and iPhone

Object A and B

<i>Object A</i> Switch	<i>Object B</i> iPhone
	

Blend Results

Ours	Profession	Operations	Problems
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		• Scale the switch • Position the switch	NA
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Orange and The Sun

Object A and B

<i>Object A</i> Orange	<i>Object B</i> The Sun
	

Blend Results

Ours	Profession	Operations	Problems
		• Scale the orange • Position the orange	NA

Operations we propose supporting to create better mock-ups of visual blends:

- **Color Replacement**
 - **The Starbucks logo** in [Starbucks Logo and The Sun](#)

<i>Object A</i> Lego Brick	<i>Object B</i> Diamond Ring	<i>Our Blend</i>	<i>Professional Blend</i>
			 % --- Executes just before main is

			made visible. <pre>function main_OpeningFcn(hObject, eventdata, handles, varargin) % This function has no output args, see OutputFcn. % hObject handle to figure % eventdata reserved - to be defined in a future version of MATLAB % handles structure with handles and user data (see GUIDATA) % varargin command line arguments to main (see VARARGIN)</pre> % Choose default command line output for main handles.output = hObject; clc; clear global; % Update handles structure guidata(hObject, handles);
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- **3D Object rotation**

- **The Starbucks coffee** in [Starbucks Coffee and Watering can](#)

<i>Object A</i> The Starbucks Coffee	<i>Object B</i> Watering Can	<i>Our Blend</i>	<i>Professional Blend</i>
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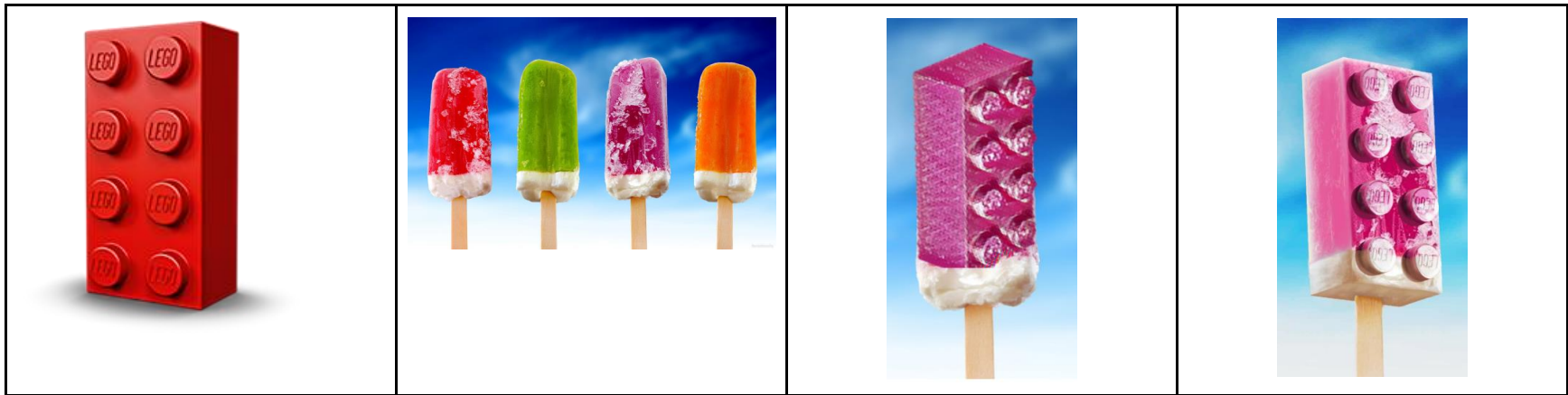


- The Lego brick in [Gray Lego and Gray Diamond](#)

Object A Lego Brick	Object B Diamond Ring	Our Blend	Professional Blend
			

- The Lego brick in [Lego and Popsicle](#)

Object A Lego Brick	Object B Popsicles	Our Blend	Professional Blend



- **Object scaling**
 - ALL

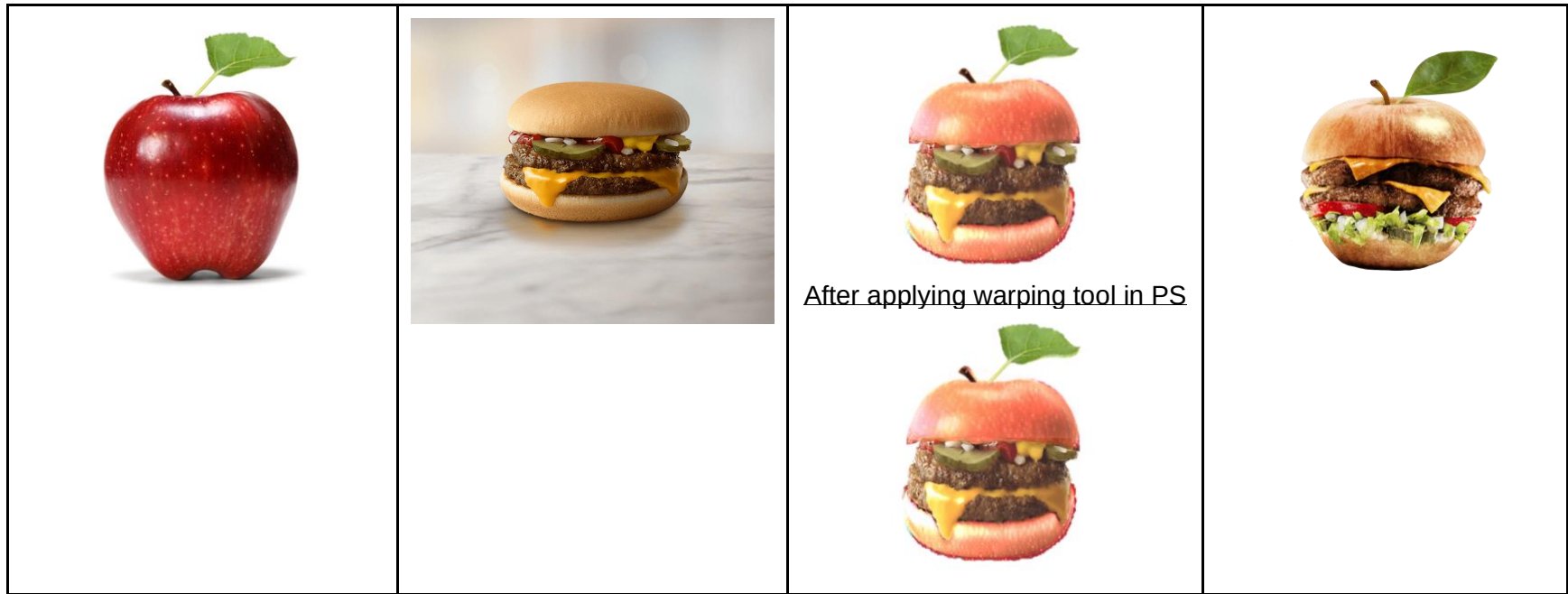
- **Object warping**
 - The shape of head of snowman in [Orange and Snowman head](#)

<i>Object A</i> Orange	<i>Object B</i> The Head of Snowman	<i>Our Blend</i>	<i>Professional Blend</i>
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- The bread buns in [Apple and Hamburger](#)

Object A Apple	Object B Hamburger	Our Blend	Professional Blend
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- Texture transfer
 - The globe in [The globe and Ice Cream](#)

Object A The Earth	Object B Ice Cream	Our Blend	Professional Blend
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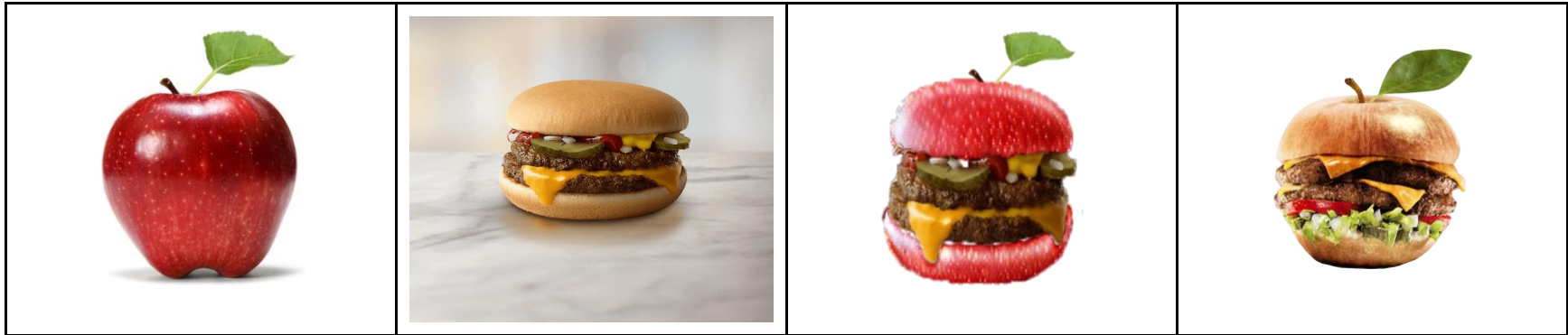


- The Lego brick in [Gray Lego and Gray Diamond](#)

Object A Lego Brick	Object B Diamond Ring	Our Blend	Professional Blend
			

- The bread buns in [Apple and Hamburger](#)

Object A Apple	Object B Hamburger	Our Blend	Professional Blend

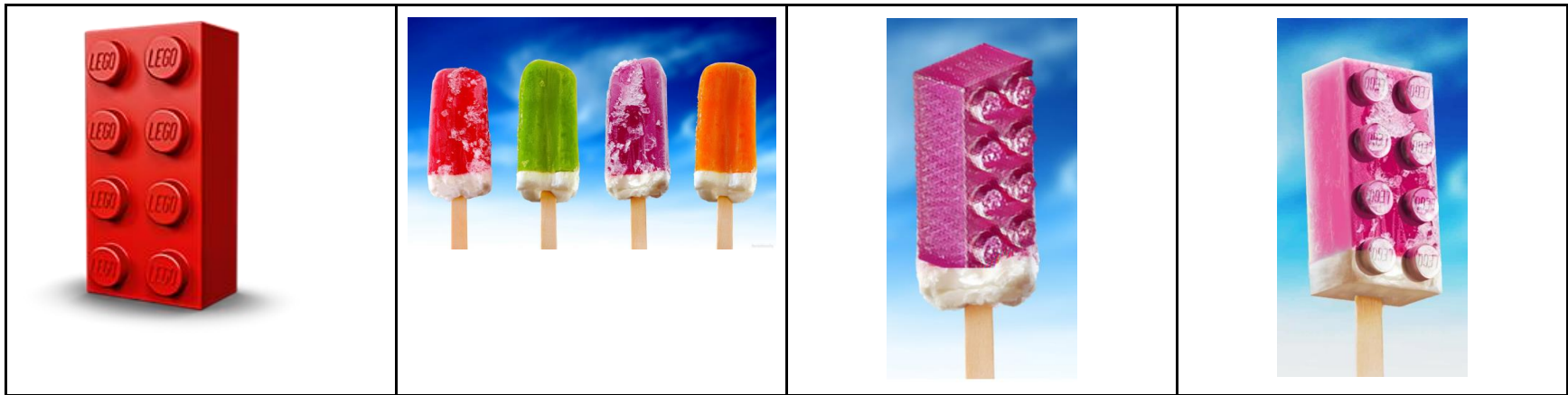


- The teapot in [Orange and Teapot](#)

<i>Object A</i> Orange	<i>Object B</i> Teapot	<i>Our Blend</i>	<i>Professional Blend</i>
			

- The Lego brick in [Lego and Popsicle](#)

<i>Object A</i> Lego Brick	<i>Object B</i> Popsicles	<i>Our Blend</i>	<i>Professional Blend</i>



- The Starbucks cup in [Starbucks Cup and The Christmas Lights](#)

Object A Starbucks Cup	Object B The Christmas Light	Our Blend	Professional Blend
			

- **Objects Segmentation**

- ALL

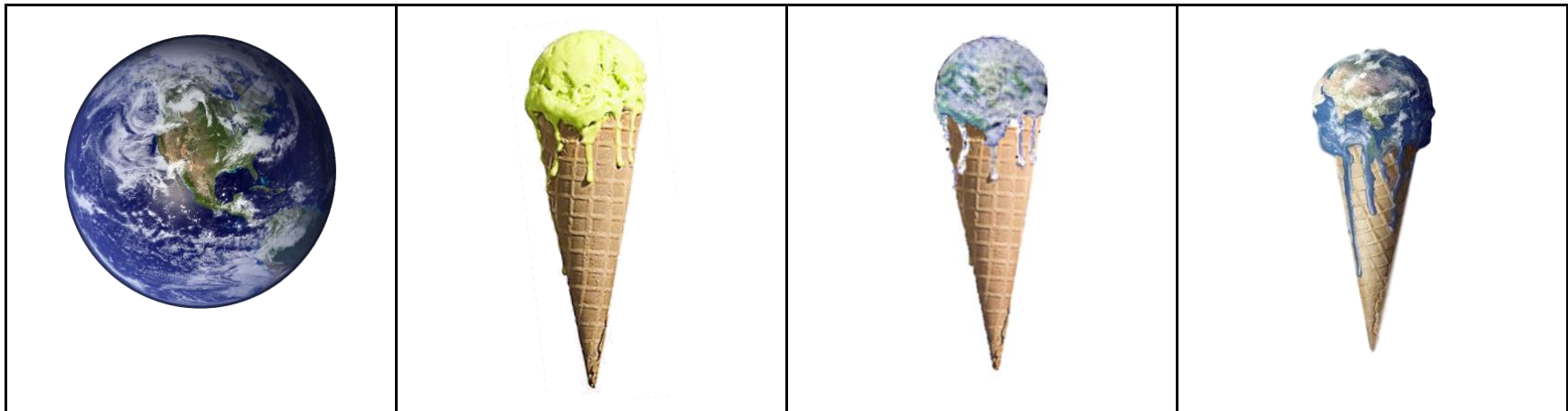
- **Color-blend Adjustment**

- The Starbucks coffee in [Starbucks Coffee and Watering can](#)

<i>Object A</i> The Starbucks Coffee	<i>Object B</i> Watering Can	<i>Our Blend</i>	<i>Professional Blend</i>
			

- The globe in [The globe and Ice Cream](#)

<i>Object A</i> The Earth	<i>Object B</i> Ice Cream	<i>Our Blend</i>	<i>Professional Blend</i>

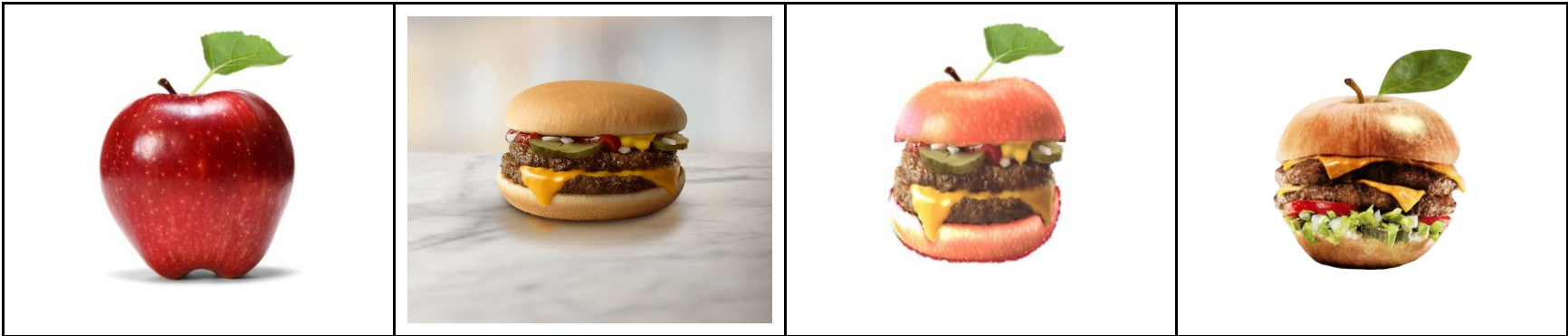


- The Lego brick in [Gray Lego and Gray Diamond](#)

<i>Object A</i> Lego Brick	<i>Object B</i> Square of Diamond Image	<i>Our Blend</i>	<i>Professional Blend</i>
			

- The bread buns in [Apple and Hamburger](#)

<i>Object A</i> Apple	<i>Object B</i> Hamburger	<i>Our Blend</i>	<i>Professional Blend</i>



- The teapot in [Orange and Teapot](#)

<i>Object A</i> Orange	<i>Object B</i> Teapot	<i>Our Blend</i>	<i>Professional Blend</i>
			

- The head of snowman in [Orange and Snowman head](#)

<i>Object A</i> Orange	<i>Object B</i> The Head of Snowman	<i>Our Blend</i>	<i>Professional Blend</i>



- The Lego brick in [Lego and Popsicle](#)

Object A Lego Brick	Object B Popsicles	Our Blend	Professional Blend
			

- The Starbucks cup in [Starbucks Cup and The Christmas Lights](#)

Object A Starbucks Cup	Object B The Christmas Light	Our Blend	Professional Blend

