Generating and Controlling Diversity in Image Search
- Supplementary Material -

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1. Human Studies

We show one illustrative example from each of our human study types in the next page. Specifically, we show an example task from our Attribute Match Study in Figure 1, an example from our Preference Study in Figure 2, and an example from our Diversity Study in Figure 3.

2. Additional Generated Images

We also show one generated image from our strongest model Uniform+ for each combination of races (namely, White, Black and Asian) and genders (namely, Male and Female) for each of the 14 professions in the following pages (Figure 4 - 17). These images show the potential of Uniform+ to combat the bias in image search. For generating pictures, we used the truncation trick, where the center of mass in the latent codes $\mathbf{w}$ is first calculated, and then samples are chosen randomly within a deviation ψ (called the truncation value) from this center. Mathematically: $\mathbf{w}' = \bar{\mathbf{w}} + \psi(\mathbf{w} - \bar{\mathbf{w}})$, where $\bar{\mathbf{w}}$ is the center and the $\mathbf{w}$'s are the latent codes. We observed good results when we set $\psi = 0.7$.

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[*]Work done during an internship at Adobe Research

Select an option

Gender Only	1
Race Only	2
Job Only	3
Both Gender and Race	4
Both Gender and Job	5
Both Race and Job	6
All three	7
None of them	8

Figure 1. An example task from our Attribute Match Study. Here, the image is generated from Uniform+.

First   Second   Third

Select an option

First	1
Second	2
Third	3

Figure 2. An example task from our Preference Study. Here, the models are as follows- First:Uniform, Second:Uniform+, Third:ADA.

First

Second

Select an option

First	1
Second	2

Figure 3. An example task from our Diversity Study. Here, the models are as follows- First:Uniform+, Second:Uniform.

Figure 4. Executive Manager

Figure 5. Administrative Assistant

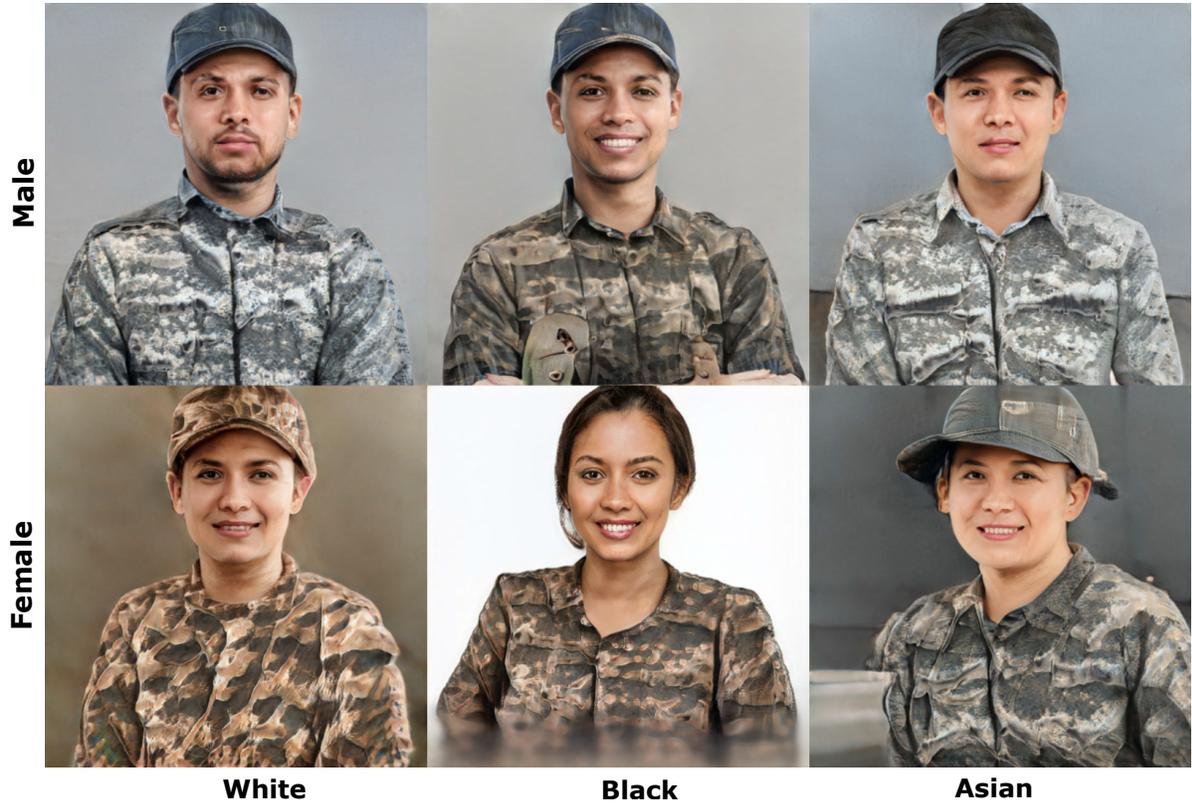Figure 6. Nurse

Figure 7. Farmer

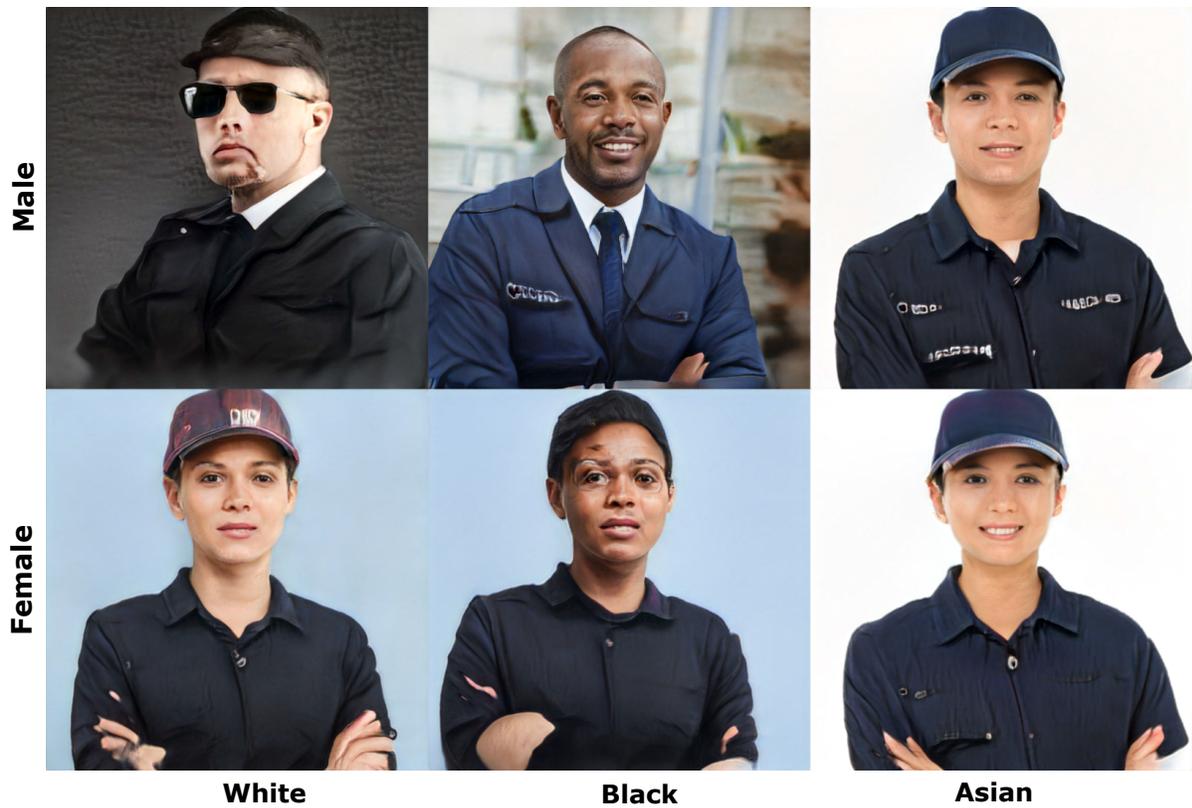Figure 8. Military Person

Figure 9. Security Guard

Figure 10. Truck Driver

Figure 11. Cleaner

Figure 12. Carpenter

Figure 13. Plumber

Figure 14. Machine Operator

Figure 15. Technical Support Person

Figure 16. Software Engineer

Figure 17. Writer