Supplementary Information

To image, or not to image: Class-specific diffractive cameras with all-optical erasure of undesired objects

Bijie Bai [†,1,2,3], Yi Luo[†,1,2,3], Tianyi Gan[1,3], Jingtian Hu[1,2,3], Yuhang Li[1,2,3], Yifan Zhao[1,3], Deniz Mengu[1,2,3], Mona Jarrahi[1,3], and Aydogan Ozcan[*,1,2,3]

[1]Electrical and Computer Engineering Department, University of California, Los Angeles, CA, 90095, USA.

[2]Bioengineering Department, University of California, Los Angeles, 90095, USA.

[3]California NanoSystems Institute (CNSI), University of California, Los Angeles, CA, USA.

[†]Equal contributing authors

[*]Correspondence: Aydogan Ozcan. Email: ozcan@ucla.edu

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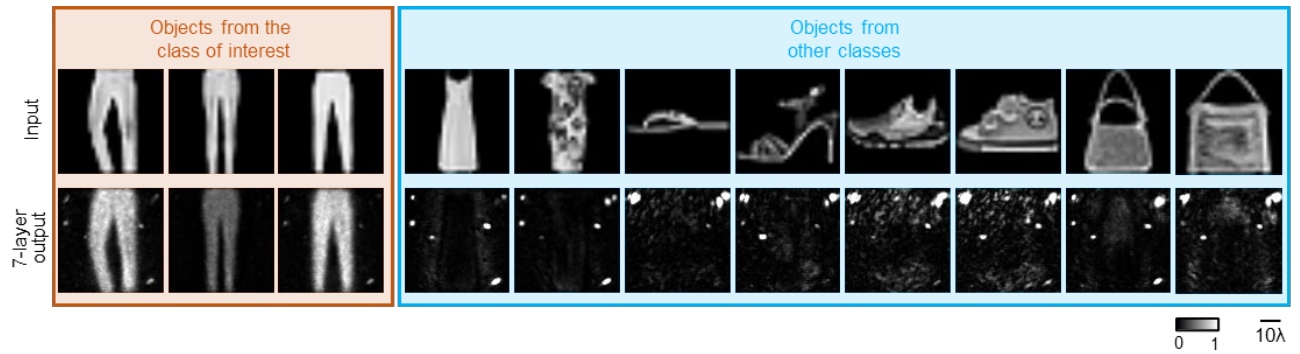Additional file 1: Figures S1-S3

Additional file 2: Movies S1

Additional file 3: Movies S2
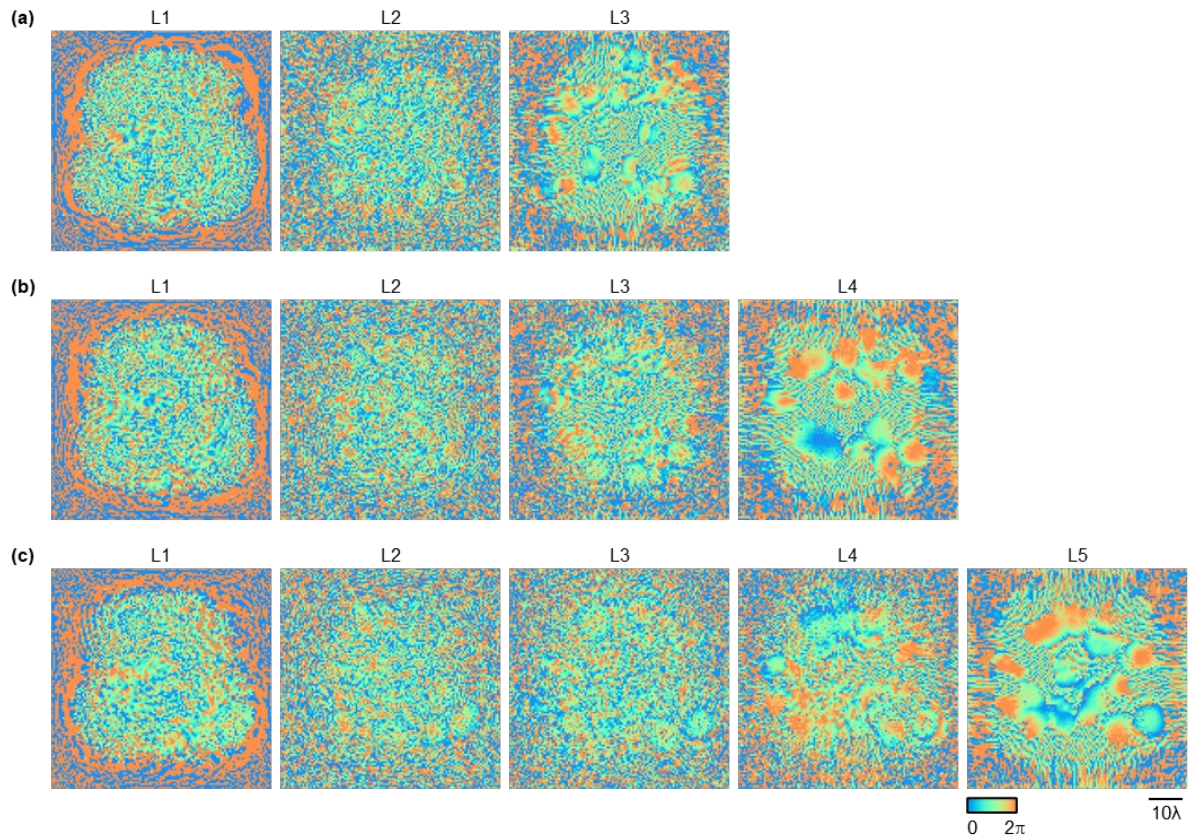
Additional file 4: Movies S3

Figure S1. Blind testing results of diffractive camera designs that selectively image different data classes. (a) Blind testing results of a three-layer, a five-layer, and a seven-layer diffractive camera design when the target class of interest was chosen as the handwritten digit '5'. (b) Blind testing results of a three-layer, a five-layer, and a seven-layer diffractive camera design when the target class of interest was chosen as the handwritten digit '7'. (c) Blind testing results of a three-layer, a five-layer, and a seven-layer diffractive camera design when the target classes of interest were chosen as digits '2', '5', and '7' - altogether. The output images at each row were adjusted using the same constant for visualization.

Figure S2. Blind testing results of a seven-layer diffractive camera design that selectively images trousers in the Fashion MNIST dataset, while all-optically erasing 4 other types of fashion objects (i.e., dresses, sandals, sneakers, and bags). The output images at each row were adjusted using the same constant for visualization.

Figure S3. Converged diffractive layers for the diffractive camera designs with different numbers of diffractive layers. (a) Diffractive layers for the three-layer diffractive camera design. (b) Diffractive layers for the four-layer diffractive camera design. (c) Diffractive layers for the five-layer diffractive camera design.

Additional file 2: Movies S1. Blind testing results of a five-layer diffractive camera design (reported in the main text Fig. 3) with input objects at different intensity levels.

Additional file 3: Movies S2. Blind testing results of a five-layer diffractive camera design (reported in the main text Fig. 3) with input objects modulated by 50% transmission filters applied at different sub-regions of the input field-of-view.

Additional file 4: Movies S3. Blind testing results of a seven-layer diffractive camera design with input objects continuously shifted throughout a large input field-of-view.