EE 245765   **106368002 張昌祺 Justin, Chang-Qi Zhang**

Advisor: 電子所 高立人   justin840727@gmail.com

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Problem 1 Grey-level resolution with C++

a Using C/C++ to quantize the gray-level resolution of lena_256.raw and baboon_256.raw from 8 bits to 1 bit. Show the results of these quantize images and explain the difference between each result image. (Figure, 15%; Discussion, 10%)

Ans

Firstly we take a look the result images which are generated by my program for both Lena and baboon grey-level resolution from 8 bits to 1 bit.
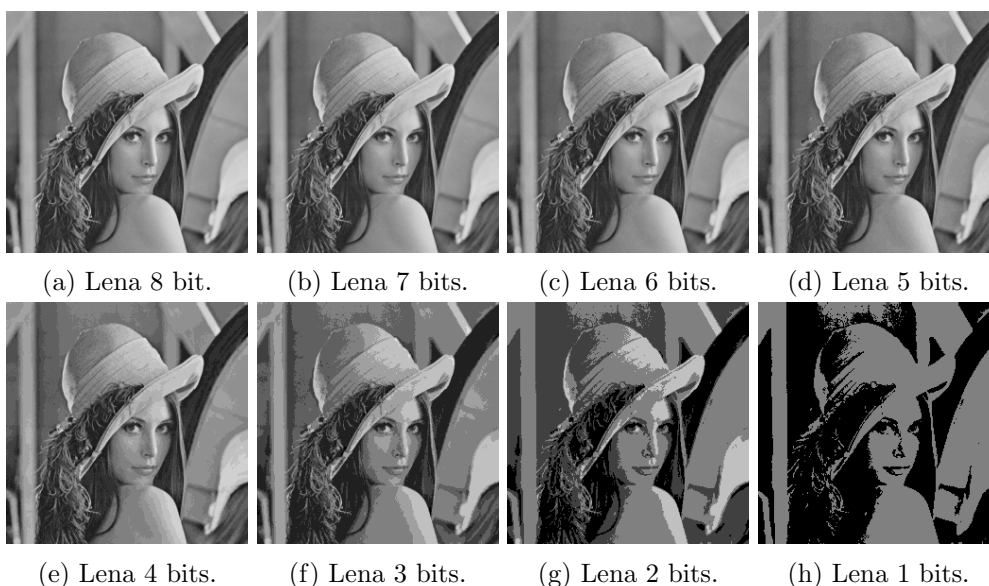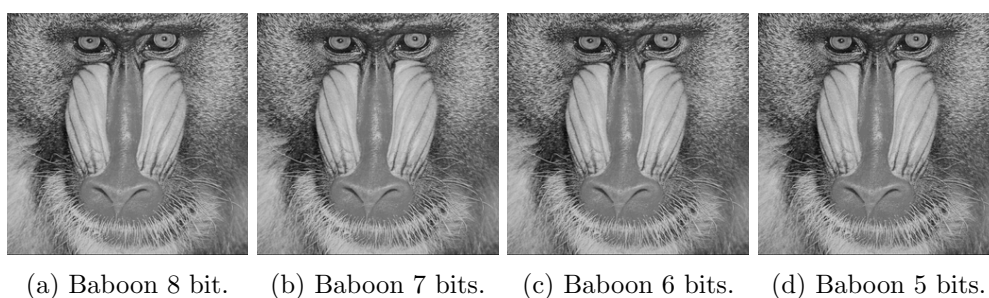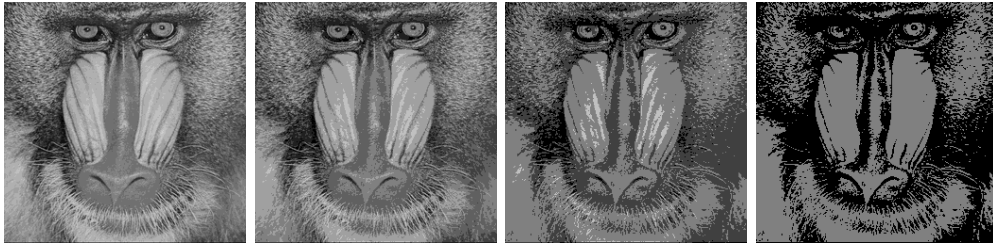

| (a) Lena 8 bit. | (b) Lena 7 bits. | (c) Lena 6 bits. | (d) Lena 5 bits. |

| (e) Lena 4 bits. | (f) Lena 3 bits. | (g) Lena 2 bits. | (h) Lena 1 bits. |

Figure 1: lena_256.raw grey-level resolution from 8 bits to 1 bit.

| (a) Baboon 8 bit. | (b) Baboon 7 bits. | (c) Baboon 6 bits. | (d) Baboon 5 bits. |

(e) Lena 4 bit.　　　(f) Lena 3 bits.　　　(g) Lena 2 bits.　　　(h) Lena 1 bits.

Figure 2: baboon_256.raw grey-level resolution from 8 bits to 1 bit.

b Calculate the corresponding with MSE (Mean Square Error, study yourself) and PSNR value. (Discussion, 10%)

Ans

Source code

References

[1] Fred G. Martin *Robotics Explorations: A Hands-On Introduction to Engineering.* New Jersey: Prentice Hall.

[2] Flueck, Alexander J. 2005. *ECE 100* [online]. Chicago: Illinois Institute of Technology, Electrical and Computer Engineering Department, 2005 [cited 30 August 2005]. Available from World Wide Web: (http://www.ece.iit.edu/ flueck/ece100).