ECE4445 / MBP4445 / ECE9201 / ECE9021 / BME9509 / MBP9509
INTRODUCTION TO DIGITAL IMAGE PROCESSING

PRACTICE PROBLEMS – HISTOGRAMS

Unlike <u>assignments</u>, practice problems will not be collected and will not be marked, but they may be tested on quizzes and on the final examination.

These questions are from Dr. Castleman's book, and they are reproduced here since the book is not required purchasing.

1. An 8-bit image of a bright object on a dark background has a histogram given by

   $H(D) = 100G(60, 5, D) + 20G(180, 20, D)$, $\quad G(\mu, \sigma, x) = \exp(-(x - \mu)^2 / (2\sigma^2))$

   where zero is black and the pixel spacing is 0.2 mm. Where would you put the threshold gray-level?

2. Below is a histogram of an image of a black-and-white soccer ball on a gray background. This soccer ball is 230 mm in diameter. What is the pixel spacing?

   [0, 520, 920, 490, 30, 40, 5910, 24040, 6050, 80, 20, 80, 440, 960, 420, 0]