$$hist[i] \sim X, for\ 0 \leq i \leq maxVal$$
$$Therefore, Supp[X] = \{0, 1,2,3 \dots, maxVal\}.$$

$$Let\ n = total\ number\ of\ pixels\ in\ the\ image, which\ means$$
$$\sum_{i=0}^{maxVal} hist[i] = n$$

$$Mean[X]\ is\ the\ average\ pixel\ value\ in\ the\ image.$$
$$Since\ Mean[Y] = \sum_{y\ \in Supp[Y]} y * p(y)\ \ , where\ p(y) = the\ probability\ of\ y,$$
$$Therefore, \quad \mu = Mean[X] = \sum_{i=0}^{maxVal} i * p(i)\ \ , \quad where\ p(i) = \frac{hist[i]}{n}$$
$$and, \quad \sigma^2 = Var[X] = \sum_{i=0}^{maxVal} (i - \mu\ )^2\ * p(i), \quad where\ p(i) = \frac{hist[i]}{n}$$

$$gaussian(i, \mu, \sigma^2)\ \epsilon\ [0,1)\ \ since\ it\ is\ a\ normalized\ probability\ function$$
$$Assuming\ Mean\ and\ Var\ are\ calculated\ correctly\ then$$
$$\sum_{i=0}^{maxVal} gaussian(i, \mu, \sigma^2)\ \ should\ approach\ 1.$$

$$With\ the\ professor's\ histogram, the\ above\ summation\ adds\ up\ to\ 0.97, which\ is\ expected.$$

$$However, since\ gaussian(i, \mu, \sigma^2)\ \epsilon\ [0,1), all\ Gval[i]\ in\ the\ program\ will\ truncate\ to\ 0.$$
$$To\ fix\ this, each\ Gval[i]\ must\ be\ scaled\ by\ n\ to\ represent\ the\ number\ of\ values\ hist[i]\ in\ n.$$

$$Therefore, \quad Gval[i] = n * gaussian(i, \mu, \sigma^2)$$