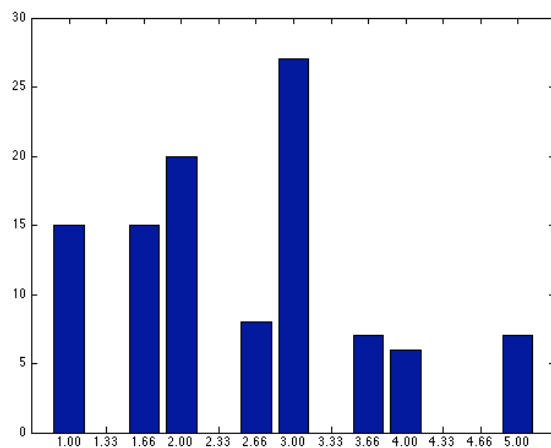


## Exercise sheet 1, AlgMod Fall 2012 (lecture)

*Please bring your solutions to class (the lecture class) on Thursday September 27.*

**Task.** On the course homepage you find a dataset `gradedata.txt` and a little Matlab script `dataPreparation.m` which reads these data into Matlab and plots the following graph:



These data are the accumulated final grade statistics of three consecutive years of my undergrad lecture on "formal languages and logic". Your task: Use the gradient-descent method for maximum-likelihood estimates of mixtures of Gaussians and compute mixture models with  $M = 1, 2, 3$  and 4 Gaussian components. Program this in Matlab. Document the parameters found in these four models, and generate nice plots where the MoG models are superimposed on the bar chart graphics. Also compute the likelihoods of the four models and document them. Furthermore, discuss what you think about the appropriateness of these MoG models (half a page discussion text maximum).