HPCSE II - Exercise 2

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March 10, 2019

Task 4
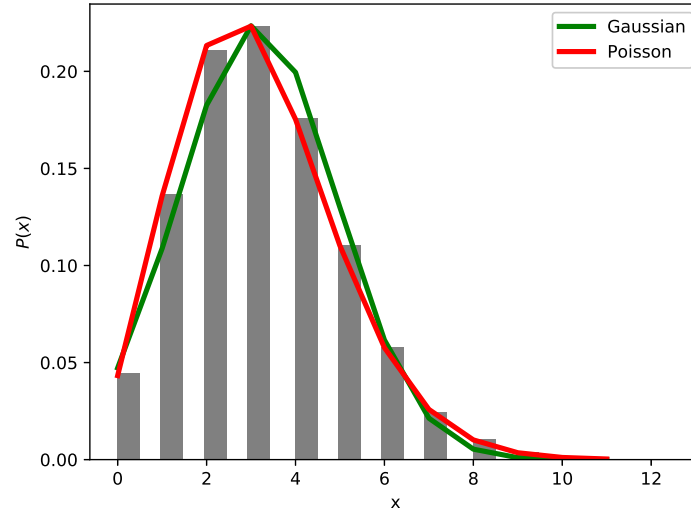

Figure 1: Normalized histogram with 100 bins and distributions from MLE parameters $\left(\hat{\lambda}_{\mathrm{MLE}} = \hat{\mu}_{\mathrm{MLE}} \approx 3.14 \text{ and } \hat{\sigma}_{\mathrm{MLE}} \approx 3.17 \right)$. The Poisson distribution clearly provides a better fit than the Gaussian. This agrees with the fact that maximum log-likelihood for the Poisson distribution is larger than the Gaussian's. As hypothesized, the data does not reflect the symmetry imposed by a Gaussian distribution.
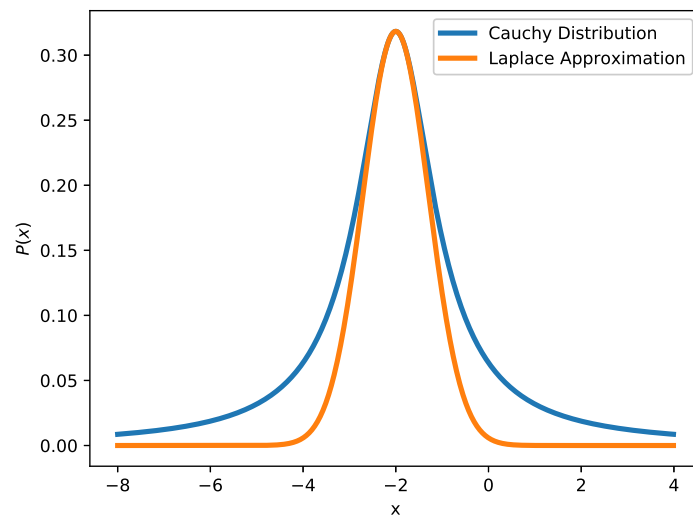
Task 5

Figure 2: Cauchy distribution for $x_0 = -2$ and $\gamma = 1$ and the corresponding Laplace approximation around $\hat{x} = x_0$.