Robust Regression

Aimee Barciauskas

November 17, 2015

1. The Laplace distribution

1. Write down the likelihood for μ, Λ

$\prod_{n=1} frac12\Lambda e^{\frac{-\Lambda}{t_n-\mu}}$

2. Show that

$\mu_{mle} = median(t_1, ..., t_N)$

The likelihood function expands to:

$f(\mu, \Lambda) = \frac{1}{2}\Lambda e^{\sum_n -\Lambda|t_n-\mu|}$

Maximizing the likelihood function is equivalent to maximizing the log of the likelihood function.

$log(f(\mu, \Lambda)) = log(\frac{1}{2}) + log(\Lambda) + \sum_n -\Lambda|t_n - \mu|$

Taking the derivate with respect to μ: