TUHH
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Report on Exam Task
Simulation and Modelling of Communication Networks

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Summer Term 2016

1 Overview

1.1 Requirement Analysis

1.1.1 Network Description

1.1.2 Statistical Web Browsing Model

The student's web browsing behavior is difficult to capture. We are going to model it by assuming a student issues an HTTP request, receives a response and then spends some time reading the response that is exponentially distributed. Missing at this point is the size of the response that follows a request. To model this we have analyzed a trace file containing 1000 response size values.

We have chosen the *chi squared goodness of fit test* to evaluate how well a distribution fits the observed data. As a first step we investigated the density of values within intervals of equal size. This is a graphical representation of what we found:

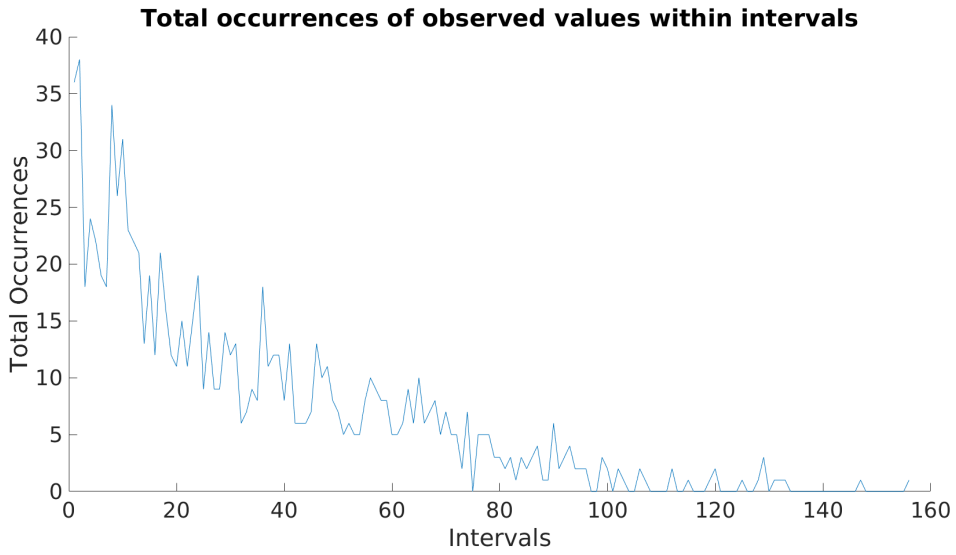

Figure 1.1: Request size value density in equally-sized intervals

This looks closely related to a *negative exponential distribution*, which is why we decided to apply the test against this distribution.

The test states that the observed values follow an Exponential distribution with mean $\lambda = 580390$ Byte at a significance level of 99.95%.