RUIN PROBABILITY IN CLASSICAL RISK PROCESS WITH WEIBULL CLAIMS DISTRIBUTION

UNDERGRADUATE THESIS

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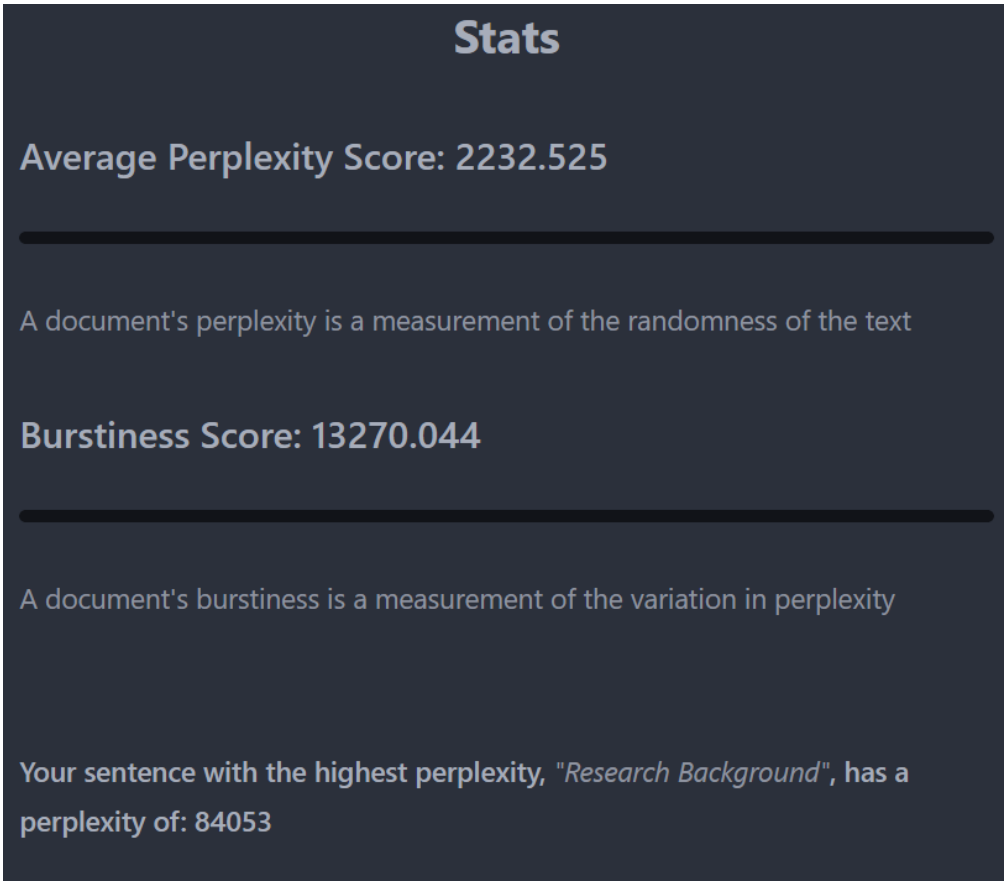

ABSTRACT

In the classical risk process, ruin is the situation when the surplus process falls to zero or below. To predict the ruin, ruin probability can be estimated to avoid the probability of bankruptcy in an insurance company. Moreover, the ruin probability is calculated through survival probability, which when ruin does not occur. In case where the function is of exponential order, the ruin probability is calculated using the Laplace transform. In other case, numerical approximations such as Euler's method and Trapezoidal rule is used. Ruin and survival probability show that when the survival probability moves to 1, the ruin probability moves to 0.

Keywords: *Ruin probability, Survival probability, Laplace transform, Weibull distribution, Euler's method, Trapezoidal rule*

ABSTRAK

Dalam proses risiko klasik, kebangkrutan adalah situasi ketika proses surplus turun menjadi nol atau lebih rendah. Untuk memprediksi kebangkrutan, probabilitas kebangkrutan dapat diperkirakan untuk menghindari kemungkinan kebangkrutan di suatu perusahaan asuransi. Selain itu, probabilitas kebangkrutan dihitung melalui probabilitas *survival*, yang dimana kebangkrutan tidak terjadi. Dalam kasus saat fungsi berorde eksponensial, probabilitas kebangkrutan dihitung menggunakan transformasi *Laplace*. Dalam kasus lain, aproksimasi numerik yaitu metode Euler dan aturan Trapesium digunakan. Probabilitas kebangkrutan dan *survival* menunjukkan bahwa ketika probabilitas *survival* bergerak ke 1, probabilitas kebangkrutan bergerak ke 0.

Kata kunci: *Probabilitas kebangkrutan, Probabilitas Survival, Transformasi Laplace, Distribusi Weibull, Metode Euler, Aturan trapesium*

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES