

بسم الله الرحمن الرحيم

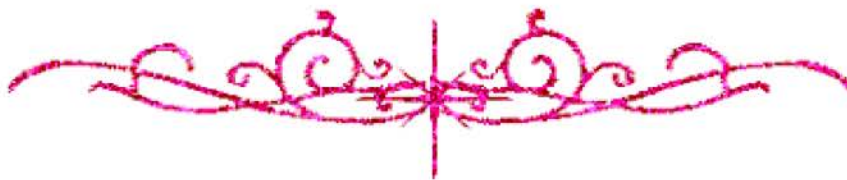


HOSSAM MAGHRABY



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم



HOSSAM MAGHRABY

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

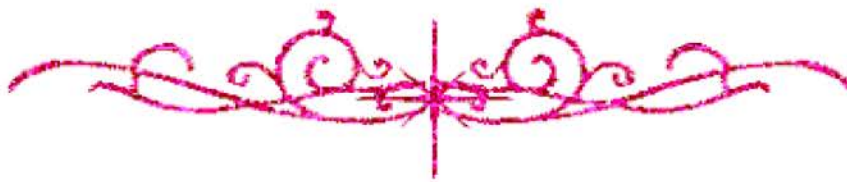


A decorative flourish in red ink, consisting of a central vertical line with symmetrical, flowing, scroll-like patterns on either side.

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بعض الوثائق الأصلية تالفة



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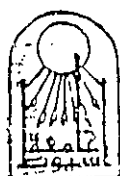
بالرسالة صفحات

لم ترد بالأصل



HOSSAM MAGHRABY

طاعة السيد
 السيد
 ع ٩٥
 مدني وسيف
 امه
 محمد
 محمد
 ٩٥
 ٩٥



B 14401

CHARACTERIZATIONS OF DISTRIBUTION FUNCTIONS BY CONDITIONAL MOMENTS AND ORDER STATISTICS

THESIS

Submitted to the Faculty of Science

University of Assiut

In Partial Fulfillment for

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(Mathematical Statistics)

By

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Egypt, 1995

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا
عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ

الْحَكِيمُ﴾ البقرة ٣٢

إهداء

إلى والدتي ووالدي

أطال الله في عمرهما

إلى زوجتي وأولادي

زياد.....وسارة

وأخوتي.....

إلى روح عمي علي.. وأستاذي الدكتور / محمد السعودي

رحمهم الله

عبد الباسط عبد الله أحمد

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I am grateful to my wife for her patience and help.

ABSTRACT

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Characterization of Distribution Functions by Conditional Moments and Order Statistics

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The objective of this research is to characterize some known distributions in statistics, which are of particular importance, based on conditional moments and properties of order statistics.

Recurrence relations of conditional moments are used to characterize some distributions, such as, the Pearson family of continuous distributions (that includes as special cases the normal, gamma, beta, Lomax, Pareto and finite range distributions). Also, two families of continuous distributions (which include as special cases the Weibull, power function, Pareto of the second kind, beta of the first kind, Burr type XII and Pearson type I distributions) have been characterized based on recurrence relations of conditional moments. The geometric, shifted negative binomial and logarithmic series distributions have been characterized, as they are special cases of a new discrete distribution introduced by Kulasekera *et al*, based on the k th conditional moments. A family of continuous distributions, $\mathfrak{T}_1$ introduced by Ouyang (1987), has been characterized based on recurrence relations of conditional moments, conditional variance, product moments of certain functions of order statistics or conditional moments of certain functions of order statistics. This family produces, as special cases, the generalized Weibull, most of the Burr types, inverted Weibull, Pareto, power function and logistic distributions. A finite mixture of two components of the family $\mathfrak{T}_1$ has been characterized in section (3.2), based on recurrence relations of conditional moments, conditional variance or

conditional moments of certain functions of order statistics. Finite mixtures of two power functions, most of the Burr types and inverted Weibull components have been characterized as they are special cases of this mixture.

Another family, $\mathfrak{T}_2$ introduced by Ouyang (1987) (which includes the Weibull, power function, Burr type XII and Pareto distributions), has been characterized in terms of variances of certain functions of order statistics or through conditional moments of certain functions of order statistics with higher order gap.

A finite mixture of two components of the family $\mathfrak{T}_2$ has been characterized by moments of certain functions of order statistics. Finite mixtures of two Weibull, Burr type XII and Pareto components have been characterized as they are special cases of this mixture. Characterizations of two cases of finite mixtures of two truncated normal distributions, have been obtained. The first is when the components have (before truncation) the same mean μ and distinct variances σ_1^2, σ_2^2 and the second case is when the components have the same variance σ^2 and distinct means μ_1, μ_2 .

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