# Food Recommendation Using Ontology and Heuristics

**Author(s):**
El-Dosuky, MA (El-Dosuky, M. A.)[1]; Rashad, MZ (Rashad, M. Z.)[1]; Hamza, TT (Hamza, T. T.)[1]; EL-Bassiouny, AH (EL-Bassiouny, A. H.)
**E-mail Address**: mouh_sal_010@mans.edu.sg; magdi_12003@mans.edu.sg; Taher_Hamza@mans.edu.sg; el_bassiouny@mans.edu.sg
[ 1 ] Mansoura Univ, Dep Comp Sci, Fac Comp & Info, Mansoura, Egypt

**Abstract**
Recommender systems are needed to find food items of one's interest. This paper reviews recommender systems and recommendation methods, then propose a food personalization framework based on adaptive hypermedia and extend Hermes framework with food recommendation functionality. Moreover, it combines TF-IDF term extraction method with cosine similarity measure. Healthy heuristics and standard food database are incorporated into the knowledgebase. Based on the performed evaluation, we conclude that semantic recommender systems in general outperform traditional recommenders systems with respect to accuracy, precision, and recall, and that the proposed recommender has a better F-measure than existing semantic recommenders.

**KeyWords**: Ontology; Semantics-Based Recommendation; Heuristics
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## A bivariate F distribution with marginals on arbitrary numerator and denominator degrees of freedom, and related bivariate beta and t distributions

**Author(s):**
El-Bassiouny, AH (El-Bassiouny, A. H.)[2]; Jones, MC (Jones, M. C.)[1]
**E-mail Address**: m.c.jones@open.ac.uk
[ 1 ] Open Univ, Dept Stat, Milton Keynes MK7 6AA, Bucks, England
[ 2 ] Mansoura Univ, Coll Sci, Dept Math, Mansoura 35516, Egypt

**Abstract**
The classical bivariate F distribution arises from ratios of chi-squared random variables with common denominators. A consequent disadvantage is that its univariate F marginal distributions have one degree of freedom parameter in common. In this paper, we add a further independent chi-squared random variable to the denominator of one of the ratios and explore the extended bivariate F distribution, with marginals on arbitrary degrees of freedom, that results. Transformations linking F, beta and skew t distributions are then applied componentwise to produce bivariate beta and skew t distributions which also afford marginal (beta and skew t) distributions with arbitrary parameter values. We explore a variety of properties of these distributions and give an example of a potential application of the bivariate beta distribution in Bayesian analysis.

**KeyWords**: Chi-squared distribution; Positive dependence; Transformation
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## RELIABILITY EQUIVALENCE FACTORS FOR SOME SYSTEMS WITH MIXTURE LINEAR INCREASING FAILURE RATES

**Author(s):**

Mustafa, A (Mustafa, A.)[1]; El-Bassiouny, AH (El-Bassiouny, A. H.)[2]
**E-mail Address**: m.c.jones@open.ac.uk
[ 1 ] King Saud Univ, Coll Sci, Dept Math, Al Kharj, Saudi Arabia.
[ 2 ] Mansoura Univ, Fac Sci, Dept Math, Mansoura 35516, Egypt.

**Abstract**

In this article, the failure rates of the system's components are functions of time t. We study two cases (i) the life time distribution of a components has two stages with increasing failure rates, (ii) the failure rates of the components have the two stages. The reliability equivalence factors of some systems with identical components are obtained. Two different methods are used to improve the given systems. Numerical examples are presented to interpret how one can utilize the obtained results. Some special cases are obtained from our results.

**KeyWords**: Linear increasing failure rate distribution; rayleigh distribution; exponential distribution; mixture distributions; mixture failure rates; hot duplication; reduction method; reliability equivalence factors .

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