

Modeling Group Perceptions Using Stochastic Simulation: Scaling Issues in the Multiplicative AHP - DTU Orbit (09/11/2017)

Modeling Group Perceptions Using Stochastic Simulation: Scaling Issues in the Multiplicative AHP

This paper proposes a new decision support approach for applying stochastic simulation to the multiplicative analytic hierarchy process (AHP) in order to deal with issues concerning the scale parameter. The paper suggests a new approach that captures the influence from the scale parameter by making use of probability distributions. Herein, the uncertainty both with regard to the scale and the inherent randomness from the parameter is captured by probabilistic input and output distributions. Provided that each alternative and criteria under consideration are independent it is assumed that the embedded uncertainty from the progression factors remains the same. The result is then an interval estimate for each alternative's final scores. This can lead to overlapping intervals of scores which may be interpreted as possible rank reversals. Thus, the decision support approach makes it possible to calculate the probability of overlapping for any given set of pairwise comparisons.

General information

State: Published

Organisations: Department of Transport, Transport policy and behaviour, Macquarie University

Authors: Barfod, M. B. (Intern), van den Honert, R. (Ekstern), Salling, K. B. (Intern)

Pages: 453-474

Publication date: 2016

Main Research Area: Technical/natural sciences

Publication information

Journal: International Journal of Information Technology and Decision Making

Volume: 15

Issue number: 2

ISSN (Print): 0219-6220

Ratings:

BFI (2017): BFI-level 1

Web of Science (2017): Indexed Yes

BFI (2016): BFI-level 1

Scopus rating (2016): SJR 0.472 SNIP 0.735 CiteScore 1.19

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 1

Scopus rating (2015): SJR 0.597 SNIP 0.963 CiteScore 1.26

BFI (2014): BFI-level 1

Scopus rating (2014): SJR 0.979 SNIP 1.223 CiteScore 1.48

BFI (2013): BFI-level 1

Scopus rating (2013): SJR 0.744 SNIP 1.439 CiteScore 1.54

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): SJR 1.35 SNIP 1.275 CiteScore 2.45

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): SJR 1.402 SNIP 1.369 CiteScore 2.2

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): SJR 0.494 SNIP 1.096

BFI (2009): BFI-level 1

Scopus rating (2009): SJR 0.511 SNIP 1.186

BFI (2008): BFI-level 2

Scopus rating (2008): SJR 0.364 SNIP 1.044

Scopus rating (2007): SJR 0.4 SNIP 0.814

Scopus rating (2006): SJR 0.238 SNIP 0.299

Scopus rating (2005): SJR 0.127 SNIP 0.982

Scopus rating (2004): SJR 0.103 SNIP 0

Scopus rating (2003): SJR 0.103 SNIP 0

Original language: English

COMPUTER, OPERATIONS, ANALYTIC HIERARCHY PROCESS, PAIRWISE COMPARISONS, RANK REVERSAL, PROBABILITY, PREFERENCES, Decision support, multi-criteria decision analysis, multiplicative AHP, stochastic simulation, Computer Science (miscellaneous)

Electronic versions:

Modeling_Group_Perceptions_Using_Stochastic_Simulation.pdf. Embargo ended: 04/03/2017

DOIs:

10.1142/S0219622016500103

Source: FindIt

Source-ID: 2291583690

Publication: Research - peer-review › Journal article – Annual report year: 2016