Abstract:

The selection of the optimum material from two or more materials based on two or more independent attributes requires the application of Multi-Attribute Decision Making (MADM) which requires the quantification of the considered attributes. When materials are to be selected based on sensorial attributes, quantification becomes difficult due to the ordinal nature of the linguistic terms used to define these attributes. *Assignment of nominal scales for sensorial attributes has been used popularly to provide quantified measures of the linguistic terms, but the assignment of constant-valued scales does not account for the variation in perception of the linguistic terms to define the sensorial attributes.* This paper proposes a novel method to account for the gap in user’s and designer’s perception of sensorial attributes in material selection. It provide a method to morph the constant-valued scales for sensorial attributes from user’s perception to designer’s perception based on the gap in perception between them. It then applies the morphed scales to material selection using the Target-driven VIKOR method.

//Comments

//First line focuses on MADM, not our area of research. Not needed.

//Meaning of underlined part is unclear

//Part in italics needs restructuring.

//Meaning of sentence in green font is unclear. Need to say in simple and better way.

//No need to talk about what we are doing.

Hey, I wrote this. Try to modify what you have written with this in mind.

User interaction attributes are significant aspect of material selection procedure. However, due to their subjective nature, it is difficult for user to interpret what user interaction attributes the user desires in the product. This paper proposes a novel analytical method which enables designer to understand the user’s perception by bridging this gap in user’s and designer’s perception of these attributes. The proposed method quantifies user interaction attributes by using an ordinal linguistic scale to rate them and makes use of fuzzy sets to translate user’s rating into designer’s rating. VIKTOR based MADM is then used to rank materials. The method performs in satisfactory manner when applied for material selection in consumer products.

Keywords: material selection, user interaction attributes, analytical method, user’s perception