

Executive Summary

SL: A Reference Scale for Smart Artifacts' Smartness Levels

Alison Walter

The term "smart" has been used to describe a variety of goods, research initiatives, and prototypes that have been introduced throughout the past 20 years. It was difficult to specify an acceptable range if a smartness quality could not be expressed as true or false. This problem prompted the development of various project classification models, frameworks, and taxonomies, but none of them offer a precise and practical smartness scale that can categorize smart artifacts and serve as a guide. To help the scientific and non-research communities more accurately define and simply comprehend the characteristics and autonomy of smart objects, this study will propose a smartness scale. The primary purpose of physical device components in smart systems is considered by the proposed smartness scale.

The authors claim that this is the first time that a smartness scale and model to determine a person's level of intelligence and serve as a guide have been proposed. The classification of smart artifacts according to smartness has already been suggested in several highly esteemed published works, however they do so for purposes other than clearly designating the smartness level of already existing or future smart artifacts. Another similar piece of work is described in, where the authors present a 10-dimensional, multi-layer taxonomy of smart items (sensing capabilities, acting capabilities, interaction direction, interaction multiplicity, interaction partner, thing compatibility, data source, data usage, offline functionality, and main purpose).

The strength, adaptability, and flexibility of users' mobile devices, such as smartphones, have been demonstrated in a wide range of commercial and research application domains, from monitoring to diagnosis. Multi-dimensional taxonomies were suggested to categorize smart artifacts according to their capabilities, according to the linked work section. However, no precise scale or model that could be used to index smart artifacts, as carried out by SAE International in the context of autonomous vehicles, was defined or extracted. The supplied smartness scale is entirely independent of the procedure of creating smart objects, which is worth emphasizing.

When utilizing the suggested classification scale model, it is important to be aware that the scale may cause a highly complex smart artifact to be classified with a lower smartness level than an artifact of lower complexity, depending on the functions of the physical artifact. Smart cars and smart toasters are two examples. However, the designation of a smartness level quickly informs a user of an artifact's capabilities, and it is possible to determine which smart artifact is the most intelligent when contrasting similar objects. Different smart artifact examples from the commercial and research domains were



studied and tagged with their corresponding smartness levels to demonstrate the viability of the proposed smartness scale.

Source: [Information](#)

KEYWORDS

Smart; smartness; smart artifact; smartness scale

