ACCESSORY CLASSIFICATION SYSTEM FOR STANDARDIZATION OF LEARNING DATA OF FASHION AI COORDINATOR -BAG & SCARF-

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For fashion AI to suggest a coordination comparable to that of a human coordinator, it is necessary to understand the fashion image and sensibility that is changed in various ways by the combination of accessories and clothes. For this, learning about the basic attributes of fashion accessories is required, and this is done based on learning data of fashion accessories including systematic and consistent tagging or labeling. As a follow-up work to the previous research on the classification system of clothing items (Park & Choi, 2020a: Park & Choi, 2020b), this study proposes a classification system for bags and scarves, which are basic accessories used in fashion.

In order to collect metadata for constructing the classification system, from March to May 2021, images of 514 bags and 479 scarves were collected from online shopping malls for women in their 20s and 30s. Three fashion design experts collected images of fashion accessories that naturally coordinated with clothes, and six undergraduate students who majored in fashion design freely described the form attributes of bags and scarves in the images to obtain metadata. In order to obtain more diverse metadata on form attributes, images of other colors of the same accessory were excluded from the analysis, and finally, metadata for 321 bags and 275 scarves were collected. Data was refined using Textom 3.0 and vocabulary was extracted focusing on nouns and adjectives, secondly, three researchers selected only the words related to the form of bags and scarves. Through appearance frequency analysis and n-gram analysis, the contents mentioned about the form of the bag and scarf were analyzed to determine the attributes dimensions of the form of the bag and scarf. The entire vocabulary extracted from the metadata was classified according to the configured dimensions and placed as sub-attributes under each dimension. The attribute classification system of bags and scarves was completed by arranging the attributes of each dimension in a hierarchical structure of the upper group with inclusiveness and representativeness and the lower group with subdivided and specific attributes.

Through the refining process, 4,004 words of 422 types were extracted from the shape-related metadata of the bag, and 2,571 words from 495 types of words extracted from the shape-related

metadata of the scarf were extracted. The extracted words included many meaningless one-syllable words such as suffixes and roots, so these words were removed, and words not related to the form of bags and scarves such as color, pattern, and material were also removed. Finally, 3,197 words of 298 types related to form of bags and 1,557 words of 225 types related to form of scarves were used for analysis.

By analyzing word appearance frequency and the bi-gram, major dimensions related to the attributes of bags and scarves were constructed. The main dimensions of the form attributes of bag were composed of ‘bag type, shape, handle type, handle attachment, flap, closure, decoration position, and trimming method’. After arranging all the attributes of the bag into a representative group based on similarity, detailed attributes were placed under each representative group to complete a classification system with a hierarchical structure (Fig. 1). And based on the appearance frequency analysis and n-gram analysis results, the main dimensions of the attributes of scarf consisted of 'scarf type, scarf shape, scarf tie, scarf hemline, scarf decoration position, scarf trimming method'. By arranging all the attributes of the scarf into a hierarchical structure, a classification system of scarf was completed (Fig. 2).

A classification system is an essential requirement for accumulating high-quality datasets for deep learning. In order for a fashion AI coordinator to effectively suggest total coordination, it must be able to identify the attributes of clothes and major accessories and suggest accessories that fit their emotions. The classification system of bags and scarves proposed in this study can be used in a recommendation system by expanding the scope of clothing as a useful standard for attribute tagging or labeling of deep learning data of fashion accessories.

Keywords: bag, scarf, classification system, form attributes, fashion AI

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