

## The Remote Sensing Data User Profile for Personalized Recommendation

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**Abstract.** To overcome limits of traditional passive remote sensing data distribution methods, personalization is an inevitable trend. User profile is the basic foundation for personalized, active and accurate remote sensing data dissemination, which can be used in the definition of users' preferences or interests of remote sensing data. In this paper, our objective is to develop a method that can model user profile to record user interests about remote sensing data. The user profile is improved on the basis of 4-tuple, its structure is  $M=\{X, W, R, V\}$ .  $X$  denote the different element items of remote sensing metadata, including spatial extent, time range, spectral range, spatial resolution etc.;  $W$  is the corresponding weight of  $X$ ;  $R$  represent the range and step of  $X$ ; vector  $V$  can reflect the distribution characteristics of  $X$ . In user's retrieve samples, the occurrence frequency of various element items can reflect user's preference, the higher the frequency of some element items, the more contribute to user's interest, vice versa.  $W$  is used to describe the contribution of each element items of  $X$ . Because the core metadata (such as spatial extent, spectral range, etc.) have a cover feature, their description is not by a value, but through a range. Therefore, this paper adopted the interval mathematics method into the representation of user profiles. Then the minimum interval which contains all range of sample values is evenly divided into equal-sized interval units, which is recorded in  $R$ . For the same element item, the occurrence frequency of interval units in user's retrieve samples, can reflect user's preference. the higher the frequency of some interval units, the more

contribute to user's interest, vice versa. Hence, we introduce the distribution eigenvalue  $V$  to describe the interval distribution characteristics of user's interest in each interval units.

**Keywords.** user profile, remote sensing data dissemination, commendation system

1

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