In image search re-ranking, besides the well-known semantic gap, intent gap, which is the gap between the representation of users' query/demand and the real intent of the users, is becoming a major problem restricting the development of image retrieval. To reduce human effects, in this paper, we use image click-through data, which can be viewed as the implicit feedback from users, to help overcome the intention gap, and further improve the image search performance. Generally, the hypothesis-visually similar images should be close in a ranking list-and the strategy-images with higher relevance should be ranked higher than others-are widely accepted. To obtain satisfying search results, thus, image similarity and the level of relevance typicality are determinate factors correspondingly. However, when measuring image similarity and typicality, conventional re-ranking approaches only consider visual information and initial ranks of images, while overlooking the influence of click-through data. This paper presents a novel re-ranking approach, named spectral clustering re-ranking with click-based similarity and typicality. First, to learn an appropriate similarity measurement, we propose click-based multi-feature similarity learning algorithm, which conducts metric learning based on click-based triplets selection, and integrates multiple features into a unified similarity space via multiple kernel learning. Then, based on the learnt click-based image similarity measure, we conduct spectral clustering to group visually and semantically similar images into same clusters, and get the final re-rank list by calculating click-based clusters typicality and within-clusters click-based image typicality in descending order. Our experiments conducted on two real-world query-image data sets with diverse representative queries show that our proposed re-ranking approach can significantly improve initial search results, and outperform several existing re-ranking approaches.