Generic POI Recommendation

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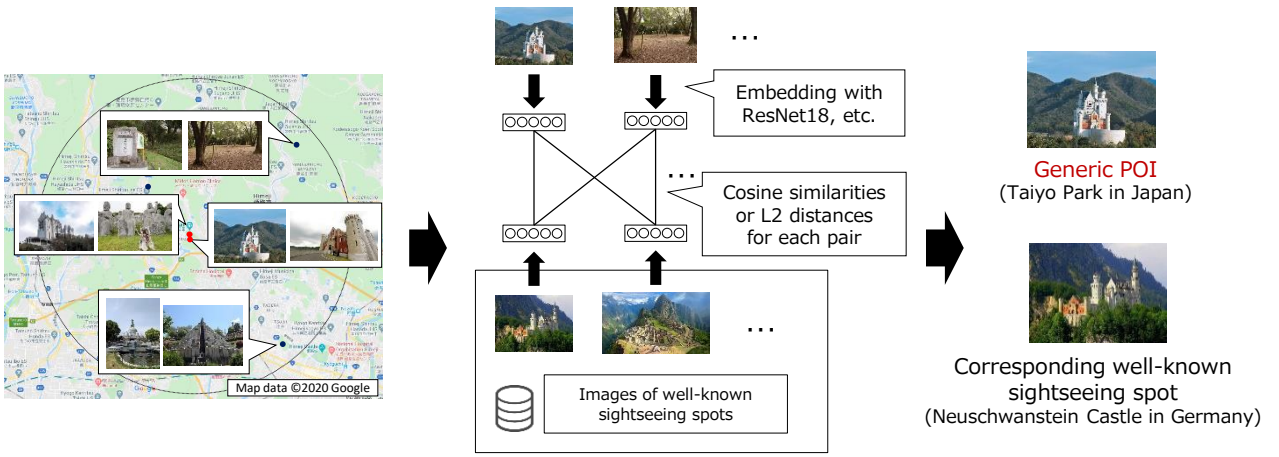


Step1) We collect candidate spots on Google Maps with their images around the input (e.g., 35.3006044, 134.8291681.)

Step2) We calculate similarities for all combinations of candidate spots and well-known sightseeing spots.

Step3) Finally, we recommend candidate spots with Top-N highest similarities as generic POIs.

Figure 1: An example of generic POI and an overview of our proposed method to discover it.

■ Abstract

For avoiding excessive congestion of tourists that causes overtourism, we propose a *Generic Point of Interest (POI)*, which is an alternative sightseeing spot potentially attractive enough for tourists to replace a well-known sightseeing spot. We also propose a method to discover generic POIs and evaluate it.

■ Proposed method

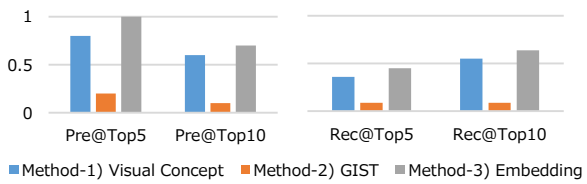
Figure 1 shows an overview of our proposed method. To discover generic POIs, we propose a method based on the similarity between images of candidate spots and those of well-known sightseeing spots.

■ Evaluation experiment

To confirm the feasibility of our method, we manually picked up five examples of generic POIs from web articles. Following them, we obtained 1972 images attached to 224 POIs around five examples of generic POIs through Google Places API and, we also obtained 25 images for famous spots by Bing Image Search API.

We compared three types of image vectorization methods Method-1) Visual Concept [Peters+, 08], Method-2) GIST descriptor [Oliva&Torralba, 01], and Method-3) Embedding with ResNet18 trained on Places365 [Zhou+,17].

Table 1: Results of evaluational experiments



■ Results

In figure 2, we show example outputs of generic POIs and corresponding famous sightseeing spots with Method-3, and the precisions and recalls for each methods in table 1. As shown in Table 1, vectorization with ResNet18 trained on Places365 is more suitable than Visual Concept and GIST descriptor for mining generic POIs.

■ Conclusion

In this study, we have proposed a novel concept of generic POI, a spot similar to well-known sightseeing spots. We have also proposed a method to discover generic POIs and we have confirmed the feasibility of our method by metrics of precision and recall. To further our study, we plan to apply our method to a larger number of candidate spots. Although our achievements have been preliminary, we hope that the proposed method will help alleviate the real world's overtourism problem as a first step.

Discovered generic POI	 Taiyo Park	 Dougashima Sea Cave Skylight	 Benkei no Hasami Iwa	 Harajiri Falls	 Takeda Castle Ruins
Well-known sightseeing spot	 Neuschwanstein Castle	 Melissani Cave	 Kjeragbolten	 Niagara Falls	 Machu Picchu
Similarity	0.903	0.896	0.865	0.863	0.861

Figure 2: We show example outputs of generic POIs and corresponding famous sightseeing spots.