International Journal of Pure and Applied Mathematics
Volume 118 No. 20 2018, 145-154
ISSN: 1314-3395 (on-line version)
url: http://www.ijpam.eu
Special Issue

ijpam.eu

MERGE OF BROAD NETWORKS FOR STURDY LANDMARK RETRIEVAL USING AN EFFECTIVE MULTI-QUERY EXPANSION

M.DIVYA[1] , V.BRINDHA, MCA.,M.Phil[2] , Dr.A.MUTHUKUMARAVEL [3]
[1] Mphil. CS-Research Scholar, Department of MCA, BIHER, Chennai, Tamil Nadu, India
[2] Assistant professor, Department of MCA, BIHER, Chennai, Tamil Nadu, India
[3] Dean-Faculty of Arts & Science, & HOD-Department of MCA, BIHER, Chennai, Tamil Nadu, India

ABSTRACT:

Given a query image issued by a user (q-user), the landmark retrieval is to come back a collection of images with their landmarks just like those of the query, whereas the previous studies on the landmark retrieval concentrated on exploiting geometries of landmarks for similarity matches between candidate images and a query images. We tend to analyze that identical landmarks given by completely different users over social media community might convey different geometry data depending on the viewpoints and/or angles, and May later, yield terribly totally different results. In fact, handling the landmarks with inferiority shapes caused by the photography of q-users is commonly nontrivial and has rarely been studied. Here we tend to propose a unique different framework, namely, multi-query expansions, to retrieve semantically strong landmarks by 2 steps. First, we tend to establish the top-k images relating to the latent topics of a query landmark to build multi-query set thus on remedy its possible inferiority shape. For this purpose, we tend to considerably extend the techniques of Latent Dirichlet Allocation. Then, driven by the standard merge filtering strategies, we tend to propose to be told a mixture of deep networks-based semantically, nonlinear and high-level features over the latent factor for

landmark image because the training set, and that is formed by matrix resolution over mixture of user-image matrix relating to the multi-query set. The learned deep network is more applied to get the features for all the other images, in the meantime resulting into a compact multi-query set inside such area. Then, the last ranking scores are manipulated over the high-level feature area between the multi-query set and every one different image, that are ranked to work as the final ranking list of landmark retrieval. Extensive experiments are performed based on real-world social media information with each landmark images along with their user data to point out the superior performance over the existing strategies; particularly our recently proposed multi-query based mid-level pattern representation technique.

INTRODUCTION

The popularity of private photography has led to an exponential growth of images with landmarks. The present social media information set characterizes each of the landmark images and associated uploaded user data.

This extremely demands for the analysis in the space of economical and effective retrieval of images supported landmarks (e.g., tower and churches), specifically landmark retrieval. Given a query image, the landmark retrieval returns the set of images with their landmarks extremely just like that of the query image. Unlike the standard image retrieval that performs at intervals of the low-level feature areas (e.g., color and texture), the landmark retrieval is conducted supported geometry data of landmarks.

A number of paradigms are proposed to perform the landmark retrieval underneath the heterogeneous feature areas, as well as the paradigms supported patch level region features, middle level attributes, and therefore the combination of low level features. Among the existing techniques, there's one crucial assumption: a top quality of query image is often provided; that's, the landmark captured from a query image continuously provides a shape with top quality.

LITERATURE SURVEY:

Effective multi-query expansions: Robust landmark retrieval

Given a query image issued by a user (q-user), the landmark retrieval is to return a set of images with their landmarks similar to those of the query, while the existing studies

on the landmark retrieval focus on exploiting geometries of landmarks for similarity matches between candidate images and a query image. We observe that the same landmarks provided by different users over social media community may convey different geometry information depending on the viewpoints and/or angles, and may, subsequently, yield very different results. In fact, dealing with the landmarks with low quality shapes caused by the photography of q-users is often nontrivial and has seldom been studied. In this paper, we propose a novel framework, namely, multi-query expansions, to retrieve semantically robust landmarks by two steps. First, we identify the top-k images regarding the latent topics of a query landmark to construct multi-query set so as to remedy its possible low quality shape. For this purpose, we significantly extend the techniques of Latent Dirichlet Allocation. Then, motivated by the typical collaborative filtering methods, we propose to learn a collaborative deep networks-based semantically, nonlinear, and high-level features over the latent factor for landmark image as the training set, which is formed by matrix factorization over collaborative user-image matrix regarding the multi-query set. The learned deep network is further applied to generate the features for all the other images, meanwhile resulting into a compact multi-query set within such space. Then, the final ranking scores are calculated over the high-level feature space between the multi-query set and all other images, which are ranked to serve as the final ranking list of landmark retrieval. Extensive experiments are conducted on real-world social media data with both landmark images together with their user information to show the superior performance over the existing methods; especially our recently proposed multi-query based mid-level pattern representation method.

im2gps: estimating geographic information from a single image

Estimating geographic information from an image is an excellent, difficult high-level computer vision problem whose time has come. The emergence of vast amounts of geographically-calibrated image data is a great reason for computer vision to start looking globally on the scale of the entire planet! In this paper, we propose a simple algorithm for estimating a distribution over geographic locations from a single image using a purely data-driven scene matching approach. For this task, we will leverage a dataset of over 6 million GPS-tagged images from the Internet. We represent the estimated

image location as a probability distribution over the Earth's surface. We quantitatively evaluate our approach in several geolocation tasks and demonstrate encouraging performance (up to 30 times better than chance). We show that geolocation estimates can provide the basis for numerous other image understanding tasks such as population density estimation, land cover estimation or urban/rural classification.

Latent dirichlet allocation

Understanding epigenetic changes across various conditions is a fundamental problem to epigenome annotation. With more high-throughput epigenomic data available, computational methods have been developed to quantify various types of epigenetic modification signals, to compare epigenetic marks between different conditions and to understand the functional consequences of epigenetic changes. However, currently few studies on epigenomes aim to provide a global view of epigenetic changes through large-scale high-throughput data integration. We apply a probabilistic graphical model called differential latent Dirichlet allocation (DLDA) to discover latent epigenetic modification modules (EMMs) from 56 reference epigenomes. We demonstrate the identified EMMs can characterize the global semantic structure of the reference epigenomes. The resulted EMMs show their condition-relevance to the corresponding reference epigenomes. The genes involved in these EMMs show epigenome-relevant functionality. Study of the involved epigenetic modification marks involved in these EMMs reveals the relative activity levels of epigenetic marks in different epigenomes. Clustering gene-epigenetic modification pairs leads to the discovery of more functional epigenetic modification groups.

Collaborative filtering beyond the user-item matrix

Trust-aware recommender system (TARS) can provide more relevant recommendation and more accurate rating predictions than the traditional recommender system by taking the trust network into consideration. However, most of the trust-aware collaborative filtering approaches do not consider the influence of contextual information on rating prediction. To the opposite, context-aware matrix factorization approaches as we know do not take trust information into consideration. In this paper, we propose two Trust-based Context-aware Matrix Factorization (TCMF) approaches to fully capture the influence of

trust information and contextual information on ratings. We integrate both trust information and contextual information into the baseline predictors (user bias and item bias) and user-item-context-trust interaction. Evaluations based on a real dataset and three semi-synthetic datasets demonstrate that our approaches can improve the accuracy of the trust-aware collaborative filtering and the context-aware matrix factorization models by at least 10.2% in terms of MAE.

Near-duplicate keyframe retrieval by nonrigid image matching

We propose a Near-Duplicate Keyframe (NDK) retrieval method that can handle extreme zooming and significant object motion. The first stage consists of eliminating false keypoint matches using symmetric property and a ratio of nearest and second-nearest neighbor distances. Then, a pattern coherency score is assigned to each pair of keyframes. These two features are combined through linear discriminant analysis (LDA) and the separating boundary is trained using SVM. Experiments are carried out for NDK retrieval on the Columbia and NTU datasets. The promising results confirm the effectiveness of our keypoint matching algorithm and show distinguishing power of our proposed features and feature weighting role in NDK retrieval.

EXISTING SYSTEM:

There do exist multiple query methods that can be adopted for landmark retrieval which we used to perform comparison against several query expansion methods such as Average Query Expansion (AQE), Discriminative Query Expansion (DQE), Pattern based Query Expansion (PQE) and PAMQE. The Results which we conclude that PAMQE outperforms AQE, DQE, and PQE by a large margin in terms of map values in two databases. This trade-off is one of the defining problems in query expansion, regarding whether it is worthwhile to perform given the questionable effects on precision and recall.

DISADVANTAGE:

Word mismatch makes Information Retrieval more difficult in Query Expansions. The problem faced here is the vocabulary mismatch and the short queries. Computationally it is very expensive in terms of space and time.

In the existing methods, if the landmark of the query image is very low quality shape, it

may not be able to return the set of images. Hence it could not be an efficient and effective retrieval of images based on landmarks.

PROPOSED SYSTEM:

We propose a novel algorithm, for sturdy landmark retrieval over a novel model based on multi-query expansions over the social media data set with the data for each of their users and uploaded landmark images. Firstly, we propose to identify a set of images that share the identical latent topics with the query landmark by adopting the Latent Dirichlet Allocation (LDA) techniques. Then, we propose a localized matrix factorization technique over the user-image mixing matrix that encodes the data from the selected images, where the latent factor regarding landmark images can be obtained. The k-mean clustering algorithm is subsequently applied to the landmark image latent factor to generate the clustering result, with each cluster as one pseudo class.

ADVANTAGE

Query expansion techniques are broadly applied for increasing the potency of the textual data retrieval systems. These techniques facilitate to beat vocabulary mismatch problems by expanding the original query with further relevant terms and reweighting the terms in the expanded query. Experimental solutions gives that the proposed combos of techniques greatly further improve the potency obtained by ancient queries.

Latent Dirichlet allocation (LDA) is a generative statistical model that permits sets of observations to be explained by unobserved groups is a great advantage to use which explain why some components of the information are similar in the IR systems.

The Matrix factorization techniques are sometimes simpler as a result of; they permit us to find the latent features underlying the interactions between users and items. Matrix factorization is just a mathematical tool which works on with matrices, and it is applicable in several domains to search the information which is hidden.

SOFTWARE ENVIRONMENT:

MATLAB

MATLAB stands for Matrix Laboratory. According to The Mathworks, its producer, it is a "technical computing environment". We

will take the more mundane view that it is a programming language.

Matlab is a program that was originally designed to simplify the implementation of numerical linear algebra routines. It has since grown into something much bigger, and it is used to implement numerical algorithms for a wide range of applications. The basic language used is very similar to standard linear algebra notation, but there are a few extensions that will likely cause you some problems at first.

IMPLEMENTATION:

Landmark Image Retrieval

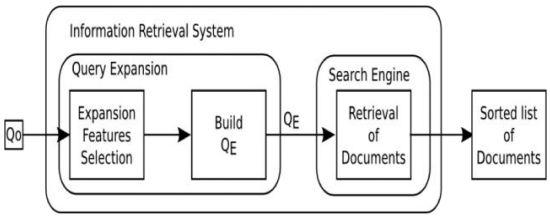
The methods are commonly based on the idea that those particular multiple queries are manually selected or simply retrieved from top-k similar items whilst we automatically determine helpful queries by exploring the latent topics of query landmark as well as the informative user communities.

Besides previous query expansion pipelines are not applicable in the context of social media networks, which cannot be addressed by simple variations of methods in literature.

Multi-Query Expansions

This is mainly because the latent factors revealed by user-landmark matrix factorization provide semantics to describe landmark images from different perspectives.

On the other hand, the proposed C-CNN with Fisher Vector pooling is superior to state-of-the-art deep baselines, Deep Places Features and Meta Object-CNN. The main reason is deep places features are trained from a very large scene centric dataset which contains images from search engines with wide-ranging diversity and density.



Sturdy Deep Networks

A well-known problem in deep feature learning for visual recognition is cross dataset generalization. It implies that training and testing across datasets generally results in a drop of performance due the dataset bias problem. In this case, the bias between datasets is due to the data distribution, density and diversity between the four datasets: Image Net, Places dataset and Picasa Web Album. Specifically, for training on we use trainable parameters of CNN-F

pre-trained on Image Net and then fine-tuning parameters on target dataset.

Filtering

We propose novel framework namely multi-query expansions, to retrieve semantically robust landmarks by two steps. Firstly, we identify the top-k images regarding the latent topics of a query landmark to construct multi-query set so as to remedy its possible low quality shape.

We significantly extend the techniques of Latent Allocation. Then, motivated by the typical collaborative filtering methods, we propose to learn collaborative deep networks based semantically, nonlinear and high-level features over the latent factor for landmark image as the training set, which is formed by matrix factorization over collaborative user image matrix regarding the multi-query set.

CONCLUSION

We proposed novel merge of broad networks for sturdy landmark retrieval, which works over landmark latent factors to further generate the high level semantic feature for both multi-query set and other landmark images.

Compared with both low level feature and mid-level pattern representation based methods, our proposed method achieved progressive performance, validated by experimental results on real-world social landmark image datasets associated with the user information.

REFERENCES

[1] Y. Wang, X. Lin, L. Wu, and W. Zhang, "Effective multi-query expansions: Robust landmark retrieval," in ACM Multimedia, 2015, pp. 79–88.

[2] C. Doersch, S. Singh, A. Gupta, J. Sivic, and A. A. Efros, "What makes paris look like paris?" ACM Trans. Graph., vol. 101, pp. 1–9, 2012.

[3] Q. Fang, J. Sang, and C. Xu, "Giant: Geo-informative attributes for location recognition and exploration," in ACM Multimedia, 2013, pp. 13–22.

[4] J. Hays and A. A. Efros, "im2gps: estimating geographic information from a single image," in CVPR, 2008. [5] D. M. Blei, A. Y. Ng, and M. I. Jordan, "Latent dirichlet allocation," J. Mach. Learn. Res., vol. 16, pp. 993–1022, 2003.

[6] Y. Shi, M. Larson, and A. Hanjalic, "Collaborative filtering beyond the user-item matrix: A survey of the state of the art and future challenges," ACM Computing Surveys, vol. 47, no. 1, 2014.

[7] K.S.Priyanka, G.Ravikumar, "Fake Biometric Detection Applied to Iris, Fingerprint, and Face Recognition by Using

Image Quality Assessment", International Journal of Innovations in Scientific and Engineering Research (IJISER), Vol.2, No.3, pp.57-72, 2015.

[8] J. Zhu, S. C. H. Hoi, M. R. Lyu, and S. Yan, "Near-duplicate keyframe retrieval by nonrigid image matching," in ACM Multimedia, 2008, pp. 41–50.

[9] L. Zhu, J. Shen, H. Jin, R. Zheng, and L. Xie, "Content-based visual landmark search via multimodal hypergraph learning," IEEE Transactions on Cybernetics, vol. 45, no. 12, pp. 2756–2769, 2015.

[10] J. Vreeken, M. Leeuwen, and A. Siebes, "Krimp: mining itemsets that compress," Data Min. Knowl. Discov, pp. 169–214, 2011.

[11] P. D. Grunwald, The minimum description length principle. Cambridge, Massachusetts, USA: The MIT press, 2007.

[12] B. Zhou, A. Lapedriza, J. Xiao, A. Torralba, and A. Oliva, "Learning deep features for scence recognition using places database," in NIPS, 2014.

[13] R. Wu, B. Wang, W. Wang, and Y. Yu, "Harvesting discriminative meta objects with deep cnn features for scence classification," in ICCV, 2015.

[14] L. Wu, Y. Wang, and S. Pan, "Exploiting attribute correlations: A novel trace lasso-based weakly supervised dictionary learning method," IEEE Transactions on Cybernetics, vol. PP, no. 99, pp. 1–12, 2016.

[15] F. Zhu and L. Shao, "Weakly-supervised cross-domain dictionary learning for visual recognition," International Journal of Computer Vision, vol. 109, no. 1-2, pp. 42–59, 2014.

[16] O. Chum, J. Philbin, J. Sivic, M. Isard, and A. Zisserman, "Total recall: automatic query expansion with a generative feature model for object retrieval," in ICCV, 2007, pp. 1–8.