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A Survey on Various Online Multitask Learning Methodologies-Edification

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ABSTRACT Multi-task learning (MTL) is an approach to machine learning that learns a problem together with other related problems at the same time, using a shared representation. This often leads to a better model for the main task, because it allows the learner to use the commonality among the tasks. The major requirement of online applications,is to acheive a highly efficient and scalable problem that can give sudden assumption with low learning cost. This requirement leaves conventional batch learning algorithms out of consideration. Then, novel organization methods, be it group or online, often encounter a dilemma when applied to a group of process, i.e., on one hand, a single classification model trained on the entire collection of data from all tasks may fail to capture characteristics of individual task; on the other hand, a model trained separately on individual tasks may suffer from insufficient training data. To rectify this problem in this paper, we propose a Edification training for participating in various activities through online, from this we can geographical model over the entire data of all process.

KEYWORDS: on-line learning, Artificial intelligence, multitask learning, classification

I. INTRODUCTION

Classical machine learning methods are often formulated as a single task learning problem, which by definition learns one task at a time. On the contrary, multitask learning aims to solve multiple related learning tasks in parallel. Many real-world problems are essentially multitask learning, although they are often broken into smaller single learning tasks, which are then solved individually by classical learning methods.Multitask learning has been extensively studied in machine learning and data mining over the past decade. Empirical findings have demonstrated the advantages of multitask learning over single task learning across a variety of application 3domains.The classical multitask learning methodology often makes two assumptions. First, it assumes there is one primary task and other related tasks are simply secondary ones whose training data are exploited by multitask learning to improve the primary task. Thus, the classical multitask learning approach focuses on learning the primary task without caring how the other tasks are learned. Second, the classical multitask learning problem is often studied in a batch education setting, which assumes that the preparation data of all tasks are available. On one hand, this assumption is not realistic for many real-world problems where data arrives sequentially. On the other hand, the batch multitasks learning algorithms usually have fairly intensive training cost and poor scalability performance, as far as large real applications is concerned.

collaborative online multitask learning (COML)

Our objective is to improve the learning performance of all tasks instead of focusing on a single main task. Second, we structure the multitask learning problem in an online learning setting by assuming that the data for each task arrives in sequence, which is a more reasonable scenario for real-world application. Unlike group learning technique, online learn methods learn over a progression of data by processing each sample ahead arrival. At each encircling, the learner first receives one instance, makes a calculation, and receives the true label.

The error information is then used to update the learning model. Propose a novel collaborative online multitask learning (COML) technique to attack the aforementioned challenges. The basic idea is to first build a generic global model from large amount of data gathered from all user, and then consequently leverage the global model to

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build the personalized classification models for individual users through a collaborative learn process. We plan this idea into an optimization problem under an online learn setting, and propose two dissimilar COML algorithms by exploring different kinds of online learning methodologies.

Statistical machine translation systems

Statistical machine translation systems are usually trained on large amounts of bilingual text and monolingual text in the target language. In this paper we explore the use of transductive semi-supervised methods for the effective use of monolingual data from the source language in order to improve conversion quality. We intend several algorithms with the intend, and at hand the strengths and weakness of every one. We present detailed experimental evaluations on the French–English Europol data set and on data from the NIST Chinese–English large data way. We confirm a significant progress in translation quality on both tasks.

Stochastic Neighbor Embedding

Stochastic Neighbor Embedding visualizes high-dimensional data by giving each data point a location in a two or three-dimension map. The technique is a variation of Stochastic Neighbor Embedding that is much easy to optimize, and produce significantly better visualizations by reducing the tendency to crowd points together in the midpoint of the map. t-SNE is better than presented techniques at creating a single map that reveals structure at many special scales. This is particularly important for high-dimension data that lie on several dissimilar, but linked, low-dimensional manifolds, such as images of objects from several classes seen from several viewpoints. For visualizing the structure of very outsized data sets, we show how t-SNE can use accidental walks on neighborhood graphs to allow the implicit structure of all of the data to influence the way in which a subset of the data be displayed. We demonstrate the performance of t-SNE on a wide variety of data sets and compare it with many other non-parametric visualization techniques, including Isomap, Samsmon mapping, and Locally Linear Embedding. The visualization produced by t-SNE are significantly better than those produced by the other techniques on almost all of the data sets

Online multitask learning and COML

We investigate the problem of online multitask learn, which differs from the classical multitask learn in two aspects. For most, our objective is to improve the learning performance of all tasks instead of focusing on a single main task. Second, we structure the multitask learning problem in an online learning setting by assuming that the data for each task arrives in sequence, which is a more reasonable scenario for real-world application. Unlike group learning technique, online learn methods learn over a progression of data by processing each sample ahead arrival. At each encircling, the learner first receives one instance, makes a calculation, and receives the true label. The error information is then used to update the learning model. Propose a novel collaborative online multitask learning (COML) technique to attack the aforementioned challenges. The basic idea is to first build a generic global model from large amount of data gathered from all user, and then consequently leverage the global model to build the personalized classification models for individual users through a collaborative learn process. We plan this idea into an optimization problem under an online learn setting, and propose two dissimilar COML algorithms by exploring different kinds of online learning methodologies.

II. CONCLUSION

We made a detailed study of collaborative online multitask learning method that is able to take advantage of individual and global models to achieve an overall improvement in classification performance for jointly learning multiple correlated tasks. We showed that it is able to outperform both the global and personal models by coherently integrating them in a unified collaborative learning framework. The experimental results demonstrate that COMLr algorithms are both effective and efficient for three real-life applications, including online spam email filtering, MHC-I binding prediction, and micro-blog sentiment detection task. Although the collaborative online multitask learning algorithm was firstly designed to solve the UGC classification problem, it has potential applications outside of the domains studied here. We hope to be able to extend our experiments to a more substantial size dataset and also to more applications. Our methods assume uniform relations across tasks. However, it is more reasonable to take into account the degree of relatedness among tasks. In conclusion, our collaborative online multitask learning method is a significant first step towards a more effective online multitask classification approach.

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REFERENCES

[1]Guangxia Li,Steven C.H.Hoi,Kuiyu Chang,Wenting Liu,and Ramesh Jain vol.26,no.8,August 2014

[2] Sundararajan M., "Optical instrument for correlative analysis of human ECG and breathing signal", International Journal of Biomedical Engineering and Technology, ISSN : 0976 - 2965, 6(4) (2011) pp.350-362.

[3]Dan Klein. Joseph Smarr. Huy Nguyen. Christopher D. Manning **"**Named Entity Recognition with Character-Level Models". In Proceedings of CONLL-2003.

[4] Rekha C.V., Aranganna P., Shahed H., "Oral health status of children with autistic disorder in Chennai", European Archives of Paediatric Dentistry, ISSN : 1818-6300, 13(3) (2012) pp.126-131.

[5]Chang CC, Lin CJ "LIBSVM: A library for support vector machines" ACM ... Communications and Control (ICECC), 2011 International Conference.

[6] Shirley Gloria D.K., Immanuel B., Rangarajan K., "Parallel context-free string-token petri nets", International Journal of Pure and Applied Mathematics, ISSN : 1311-8080, 59(3) (2010) pp.275-289.

[7]Nicola Ueffing," Transductive learning for statistical machine translation" In Proceedings of the 45th Annual Meeting of the Association of Computational Linguistics, pp. 25-32.'

[8] Ramakrishnan V., Srivatsa S.K., "Pitch control of wind turbine generator by using new mechanism", Journal of Electrical Systems, ISSN : 1112-5209, 6(1) (2010) pp.1-15.

[9]G. Li, K. Chang, S. C. H. Hoi, W. Liu, and R. Jain, "Collaborative online learning of user generated content," in Proc. 20th ACM Int. CIKM, 2011, pp. 285–290.

[10] Karthikeyan T., Subramaniam R.K., Johnson W.M.S., Prabhu K., 'Placental thickness & its correlation to gestational age & foetal growth parameters- a cross sectional ultrasonographic study", Journal of Clinical and Diagnostic Research, ISSN : 0973 - 709X, 6(10) (2012) pp.1732-1735.

[11]L.J.P. van der Maaten and G.E. Hinton. "Visualizing High-Dimensional Data Using t-SNE". Journal of Machine Learning Research 9(Nov) PP: 2579-2605, 2008.

[12]C. Widmer, Y. Altun, N. C. Toussaint, and G. Rätsch, "Inferring latent task structure for multi-task learning via multiple kernel learning," BMC Bioinformatics, vol. 11, Suppl. 8, p. S5, Oct. 2010.

[13] G. Li, S. C. H. Hoi, K. Chang, and R. Jain, "Micro-blogging sentiment detection by collaborative online learning," in IEEE 10th ICDM, Sydney, NSW, Australia, 2010, pp. 893–898.

[14] Jemima Daniel,The world of illusion in Tennessee William's "The Glass Menagerie",International Journal of Innovative Research in Science, Engineering and Technology,ISSN: 2319-8753,pp 6183-6185 ,Vol. 2, Issue 11, November 2013.

[15] Jemima Daniel,Themes of Violence, Horror, Death in Hemingway,International Journal of Innovative Research in Science, Engineering and Technology,ISSN: 2319-8753,pp 4500-4503,Vol. 2, Issue 9, September 2013.

[16] Jemima Daniel,Role of Technology in Teaching Language,International Journal of Innovative Research in Science, Engineering and Technology,ISSN: 2319-8753, pp 2287-2283,Vol. 2, Issue 6, June 2013.

[17] Jemima Daniel,Optimism in Samuel Beckett's Waiting for Godot,International Journal of Innovative Research in Science, Engineering and Technology,ISSN: 2319-8753,pp 5467-5470,Vol. 2, Issue 10, October 2013.

[18] Jemima Daniel,Treatment of Myth in Girish Karnad`S Play the Fire and the Rain,International Journal of Innovative Research in Science, Engineering and Technology ,ISSN: 2319-8753, pp 1115-1117 ,Vol. 2, Issue 4, April 2013.

[19] Jemima Daniel,Audio-Visual Aids in Teaching of English,International Journal of Innovative Research in Science, Engineering and Technology,ISSN: 2319-8753, pp 3811-3814,Vol. 2, Issue 8, August 2013.