

應用線上顧客產品認知程度與瀏覽行為於個人化商品推薦之研究

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摘要

目前許多線上產品推薦系統，利用資料探勘技術挖掘顧客特質和交易關聯性，作為商品推薦依據。但資料探勘需龐大的歷史資料，才能準確的推薦；具有相同背景的顧客不一定有相同的喜好。由於顧客對產品知識認知程度，對於購買決策具有重大影響力。本研究應用網路瀏覽者對產品認知程度與瀏覽行為，建構網路瀏覽者產品偏好指數，作為瀏覽者個人化產品推薦依據。並透過網頁問卷回饋的分析結果，修正瀏覽者行為項目之權重值，以期提昇瀏覽者產品偏好指數之準確性。並以3G手機產品為例建構測試系統，以測試推薦產品準確性及瀏覽者滿意度。案經250位瀏覽者測試結果顯示：成功推薦瀏覽者第一偏好產品(系統推薦也是第一順序)之機率達60.8%；瀏覽者滿意度誤差指數可隨瀏覽人數增加而逐漸縮小(由0.7085縮小至0.49)，顯示本分析模式確實有效預測網路瀏覽者之產品偏好，作為個人化商品推薦之用。期望本分析模式，能作為購物網站業者建構商品推薦系統之參考。

關鍵詞：產品推薦系統；瀏覽者行為；產品知識；瀏覽行為分析模式

目錄

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林世懿(2004)。「Forrester:2010年全美線上銷售將突破3千億美元」，2004年8月17日，取自www.find.org.tw/find/home.aspx?page=news&id=3321 許盟雪(2002)。網路產品評鑑訊息之有用性與模糊性對消費者消費決策之影響。元智大學管理研究所碩士論文，未出版，桃園縣。黃如慧(2004)。一個預測線上顧客產品知識程度之方法。朝陽科技大學資訊管理研究所碩士論文，未出版，台中縣。萬恒鈞(2003)。網路購物環境對消費者購買意願之影響。銘傳大學國際企業學系研究所碩士論文，未出版，桃園縣。楊正瑀(2002)。不同程度產品知識及多重外在提示對網路購物意願之影響。國立交通大學管理科學系研究所碩士論文，未出版，新竹縣。鍾雯玲(2003)。消費者的產品知識對系統性產品偏好的影響。銘傳大學管理科學研究所碩士論文，未出版，桃園縣。A.G. Buchner, and M.D. Mulvenna(1998). Discovering internet marketing intelligence through online analytical web usage mining. ACM SIGMOD record, I27(4), 54-61. Alba, J. W., and Hutchinson, J. W. (1987), Dimensions of consumer expertise. Journal of Consumer Research, 13(3), 411-454. Allen, C., Kania D., and Yaeckel, B. (1998), Internet World Guide to One-To-One Web Marketing. New York : John Wiley & Sons. Aleksander B. Demko and Nicolino J. Pizzi(2003), The utility of graph theoretic software metrics: a case study. Electrical and Computer Engineering, 2, 1309 - 1312. Ansari, A., Essegaijer, S., and Kohli, R.(2000). Internet Recommendation Systems. Journal of Marketing Research, 37(3), 363-375. B. Padmanabhan, and A Tuzhilin(1999), Unexpectedness as a measure of interestingness in knowledge. Decision Support Systems, 27(3), 303-318. Berry, M. and G. Linoff(1997), Data Mining Techniques for Marketing, Sales and Customer Support, New York:John Wiley and Sons. Brucks & Merrie(1985). The Effects of Product Class Knowledge on Information Search Behavior. Journal of Consumer Research, 12(1), 1-15. B.T. Ratchford(2001). The economics of consumer knowledge. Journal of Consumer Research, 27(4), 397-411. C. Whan Park, David L. Mothersbaugh, and Lawrence Feick(1994). Consumer Knowledge Assessment. Journal of Consumer Research, 21(2), 71-82. C. Ranganathan, and S Ganapathy(2002). Key dimensions of business - to - consumer web sites. Information & Management, 39(6), 457-465. Chee, S. H. S., Han, J., and Wang, K.(2001). RecTree: An Efficient Collaborative Filtering Method. Lecture Notes in Computer Science, 21(14), 141-151. Chen, M.S., Park, J.S. and Yu, P.S.(1998). Efficient data mining for path traversal patterns. IEEE Transaction on Knowledge and Data Engineering, 10(2), 209-221. Chung H.M. and Gray P., Guest Editors(1999). Special Section: Data Mining. Journal of Management Information Systems, 16(1), 11-16. Cooley, R., Mobasher, B., and Srivastava, J. (1997). Web mining:information and pattern discovery on the world wide web. In Proceedings of International Conference on Tools with Artificial Intelligent. (pp. 558-567). CA:Newport Beach. Cooley, R., Mobasher, B., and Srivastava, J. (1997). Grouping web page references into transactions for mining world wide web browsing patterns. In: Knowledge and Data

Engineering Workshop. (pp.2-9). CA:Newport Beach. Colin, G., Harrison, A., and Caglayan, K. (1997). Agent Sourcebook. New York: John Wiley & Sons. David W. McDonald(2003). Ubiquitous Recommendation Systems. *Invisible Compuing*, 36(10), 111-112. G.J. Biehal, and DA Sheinin(1998). Managing the brand in a corporate advertising environment:A decision-making framework for brand managers. *Journal of Advertising*, 27(2), 99-110. G. Karypis(2001). Evaluation of Item-Based Top-N Recommendation Algorithms. *Proceedings of the 10th International Conference on Information and Knowledge Management*. (pp. 247-254). University of Minnesota. GM Rose, ML Meuter and JM Curran(2005). On-line waiting: The role of download time and other important predictors on attitude toward e-retailers. *Psychology and Marketing*, 22(2), pp. 127-151. Goldberg, D. Nichols, Oki, D. B. M., and Terry, D. (1992). Using Collaborative Filtering to Weave an Information Tapestry. *Communication ACM*, 35(12), 61-70. Han, J., and Kamber, M.(2001).*Data Mining: Concepts and Techniques*. Morgan Kanfmann Publishers. Herlocker, J. L., Konstan, J. A., and Riedl, J.(2000). Explaining Collaborative Filtering Recommendation. *Proceedings of the ACM 2000 Conference on Computer Supported Cooperative Work*. (pp.241-250). New York. Hong, T.P., Lin, K.Y. and Wang, S.L. (2002). Mining linguistic browsing patterns in the World Wide Web. *International Journal of Software Computing*, 6(5), 329-336. Hsieh, C. C. and Chang, C.T. (2001). An enhanced transaction identification module on web usage mining. (pp.241-252). Asia Pacific Management. H. Kato, H. Hiraishi and F. Mizoguchi(2000). Log summarizing agent for web access data using data mining techniques. *International Conference On IFSA World Congress and 20th NAFIPS*. (pp.2642-2647) BC:Canada. J Strauss, R Frost(2006). *E-Marketing*. Pearson prentice hal. Publisher. Kitsuregawa, M., Shintani, T. and Pramudiono, I. (2001). Web mining and its SQL based parallel execution. *Computer Science Communications*, 5(5), 128-134. Kun-Lung Wu, Aggarwal, C.C., Yu, P.S.(2001). Personalization with Dynamic Profiler. *International Workshop on Advanced Issues of E-Commerce and Web-Based Information Systems*. (pp. 12-20). WECWIS. Lam, S. K., McNee, S. M., Konstan, J. A., and Riedl, J.(2002). Getting to Know You: Learning New User Preferences in Recommender System. *Proceedings of the International Conference on Intelligent User Interfaces*. (pp. 127-134). University of Minnesota. L.R. Klein(1998). Evaluating the Potential of Interactive Media through a New Lens-Search versus Experience Goods. *Journal of Business Research*, 41(3), 195-203. Myra Spiliopoulou(2000). Web Usage Mining for Web Site Evaluation. *Communications of the ACM*, 43(8), 127-134. Olaru, C. and Wehenkel, L.(1999). Data Mining. *IEEE Computer Applications in Power*, 12(3), 19-25. Park, C. W., Mothersbaugh, D. L., and Feick, L. (1994). Consumer Knowledge Assessment. *Journal of Consumer Research*, 21(6), 71-82.. Park, C. W., Feick, L., and Mothersbaugh, D. L.(1992). Consumer knowledge assessment-how product experience and knowledge of brands,attributes, and features affects what think we know. *Advances In Consumer Research*, 19(3), 193-198. Park, C. W., and Lessig V. P.(1981).Familiarity and its impact on consumer decision biases and heuristics. *Journal of Consumer Research*, 8(9), 223-230. Rao, A. R., and Monroe, K. B. (1988).The moderating effect of prior knowledge on cue utilization in product evaluations. *Journal of Consumer Research*, 15(2), 253-264. Resnick, Paul and R. Varian (1997). Recommender systems. *Communication of ACM*, 40(3), 56-58. Sarwar, B., Karypis, G., Konstan, J., and Riedl, J.(2000). Analysis of Recommendation Algorithms for E-Commerce. *Proceedings of the ACM E-Commerce 2000 Conference*. (pp. 158-167). Minnesota: University of Minneapolis. Schafer, J. B., Konstan, J. A., and Riedl, J.(2000). E-Commerce Recommendation Applications. *Journal of Data Mining and Knowledge Discovery*, 5(1), 15-152. Schafer, J. B., Konstan, J. A., and Riedl, J.(1999). Recommender System in E-Commerce. *Proceedings of the first ACM conference on Electronic Commerce*. (pp. 158-166). Denver: University of Colorado. Shardanand U.and Maes P. (1995). Social Information Filtering:Algorithms for Automating ‘ Word of Mouth ’ . *Proceedings of the Conference on Human Factors in Computing Systems*. (pp.210-217). Denver: University of Colorado. Surprenant, C. F., and Solomon M. R.(1987). Predictability and Personalization in the Service Encounter. *Journal of Marketing*, 51(2), 86-96. Xiaohua Hu, and Nick Cercone(2004). A Data Warehouse/Online Analytic Processing Framework for Web Usage Mining and Business Intelligence Reporting. *International Journal of Intelligent Systems*, 19(7), 585-606. YH Cho, JK Kim, and SH Kim(2002). A personalized recommender system based on web usage mining and decision tree induction. *Expert Systems with Applications*, 23(3), 329-342. Yuan Soe-Tsyr(2002). A personalized and integrative comparison-shopping engine and its applications. *Decision Support Systems*, 34(2), 139-156. Yun, C.H. and Chen, M.S.(2000). Using pattern-join and purchase-combination for mining transaction patterns in an electronic commerce environment. *The 24th Annual International Conference On Computer Software and Applications*. (pp.99-104). Denver: University of Colorado. Zhang, W., Xu, B., Song, W., Yung, H..(2000). Data mining algorithms for web pre-fetching. *Web information Systems Engineering*, 2, 34-38.