資管系資訊擷取與推薦技術
91學年度第一學期 Syllabus

授課老師   黃三益教授, 管4071, 分機: 4723
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上課時間   **9:10am-12pm, Tue.**
Office Hour **Fri, 1-2pm (me)**

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教科書   R. R. Korfhage, *Information Storage and Retrieval*, John Wiley and Sons, Inc. *(全華圖書代理)* and the attached paper list

Projects   There will be a final project. Each project will be conducted in a group basis. Each group is composed of 2 or 3 members.

Tests   There will be a mid-term exam and a final exam.

Grading   Mid-term exam: 30%, Project: 30%, Final: 30%, Class participation: 10%

Policy   *There will be absolutely no late submission unless otherwise noticed.* The score of a group project is judged by the quality of its outcome and your contribution toward the project.

Topics to be covered

Part 1: Documents, Queries, and their Mappings
          Chapter 2, 3, 4
Part 2: Text Analysis
          Chapter 5
Part 3: Modifying User Queries Based on Their Profiles
          Chapter 6, 7
Part 4: Effectiveness Measures
          Chapter 8
Part 5: Alternative IR Techniques
          Chapter 9,10
Part 6: Content-based Recommendation
Part 7: Collaborative Recommendation
Part 8: Data mining based Recommendation

Comments

This course covers techniques related to information retrieval and recommendations. These techniques are essential for students who seek to develop more advanced features in e-commerce applications. In particular, many techniques introduced in this course can be used for personalization, an important component for maintaining better relationships with customers.

Paper List on Recommendation Techniques:

Overview

- ✓ J. B. Schafer , J. Konstan , J. Riedi, "Recommender systems in e-commerce," Proceedings of the first ACM conference on Electronic commerce November 1999.
- ✓ H. Hirsh, C. Basu and B. D. Davison, "Learning to Personalize," *CACM*, 43(8), 2000
- ✓ B. Smyth and P. Cotter, "A Personalized Television Listings Service," *CACM*, 43(8), 2000

Content-Based Approach

- ✓ K. Lang, "Newsweeder: Learning to Filter Netnews," *Proceedings of the Conference on Machine Learning*, 1995
- ✓ B. Krulwich, "Learning document category descriptions through the extraction of semantically significant phrases," *Proceedings of AAAI Symposium on Machine Learning in Information Access*, 1995
- ✓ R. J. Mooney, P. N. Bennett and L. Roy, "Book Recommending Using Text Categorization," *Proceedings of the AAAI-98 Workshop on Recommender Systems*, 1998 (Current book-recommending systems at Amazon.com)
- ✓ K. Bradley, R. Rafter and B. Smyth, "Case-Based User Profiling for Content Personalization", *Proceedings of the AAAI-98 Workshop on Recommender Systems*, 1998
- ✓ P. Resnick and H. R. Varian. Recommender Systems. *Communications of the ACM*, Vol. 40(3):pages 56–58, March 1997.
- ✓ R. Mooney and L. Roy. Content-Based Book Recommending Using Learning for Text Categorization. *Proceedings of the Fifth ACM Conference on Digital Libraries*, pages 195–204, San Antonio, TX, July 2000. ACM Press.
- ✓ I. Schwab, W. Pohl and I. Koychev, "Learning to Recommend from Positive Evidence," *Proc. of the 5'th Int'l. Conf. on Intelligent User Interfaces,* Jan. 2000.

Collaborative Approach

- ✓ U. Shardanand and P. Maes, "Social Information Filtering: Algorithms for Automating Word of Mouth," *Proceedings of the Conference on Human Factors in Computing Systems*, 1995
- ✓ P. Resnick, N. Iacovou, M. Suchak, P. Bergstrom and J. Riedl, "GroupLens: An Open Architecture for collaborative Filtering of Netnews," *Proceedings of the ACM Conference on Computer Supported Cooperative Work*, 1994
- ✓ D.M. Pennock, E. Horvitz, S. Lawrence and C.L. Giles, "Collaborative Filtering by Personality Diagnosis: A Hybrid Memory- and Model-Based Approach," *Proceedings of the Conference on Uncertainty in Artificial Intelligence*, 2000
- ✓ D. Goldberg, D. Nichols, B. M. Oki and D. Terry, "Using Collaborative Filtering to Weave an Information Tapestry," *CACM*, 35(12), 1992
- ✓ B. Sarwar, G. Karypis, J. Konstan and J. Riedl, "Item-based Collaborative Filtering Recommendation Algorithms," GroupLens Research Group/Army HPC Research Center, University of Minnesota, 2000
- ✓ [BHK98]　J. S. Breese, D. Heckerman and C. Kadie, "Empirical analysis of predictive algorithms for collaborative filtering," Tech. Report, MSR-TR-98-12, Microsoft Research,

Oct. 1998.
- ✓ [THA+97] L. Terveen, W. Hill, B. Amento, D. McDonald, and J. Creter. PHOAKS: A System for Sharing Recommendations. Communications of the ACM, Vol. 40(3):pages 59–62, March 1997.
- ✓ [KMM+97] J. A. Konstan, B. N. Miller, D. Maltz, J. L. Herlocker, L. R. Gordon, and J. Riedl. GroupLens: Applying Collaborative Filtering to Usenet News. Communications of the ACM, Vol. 40(3):pages 77–87, March 1997.

Hybrid of two Approaches

- ✓ M. Balabanovic, "An Adaptive Web Page Recommendation Service, " *Proceedings of the Conference on Autonomous Agents*, 1997
- ✓ C. Basu, H. Hirsh and W. Cohen, "Recommendation as Classification: Using Social and Content-Based Information in Recommendation," *Proceedings of AAAI Symposium on Machine Learning in Information Access*, 1998
- ✓ [BS97] M. Balabanovi'c and Y. Shoham. Fab: Content-Based, Collaborative Recommendation. Communications of the ACM, Vol. 40(3):pages 66–72, March 1997.
- ✓ [Bau99] P. Baudisch. Joining Collaborative and Content-based Filtering. In Proceedings of the Conference on Human Factors in Computing Systems (CHI'99), Pittsburgh, PA, May 1999. CHI'99 Workshop on Interacting with Recommender Systems.
- ✓ [SN99] I. Soboroff and C. Nicholas. Combining Content and Collaboration in Text Filtering. In Proceedings of the IJCAI'99 Workshop on Machining Learning in Information Filtering, pages 86–91, Stockholm, Sweden, August 1999.

Summarization/Extraction

- ✓ U. Hahn and I. Mani, "The Challenges of Automatic Summarization," IEEE Computer, 33(11), Nov., 2000.
- ✓ N. Ziviani, E. Silva, "Compression: A Key for Next-Generation Text Retrieval Systems," IEEE Computer, 33(11), Nov., 2000.

Exemplar

- ✓ B. Merialdo, K.T. Lee, D. Luparello and J. Roudaire, "Automatic Construction of Personalized TV News Programs," *Proceedings of the Conference on Multimedia*, 1999
- ✓ D. Hysell, "Meeting the Needs (and Preferences) of a Diverse World Wide Web Audience," *Proceedings of the Conference on Computer documentation*, 1998
- ✓ U. Manber, S Patel and J. Robison, "Experience with Personalization on Yahoo!" *CACM*, 43(8), 2000
- ✓ R. Armstrong, D. Freitag, T. Joachims and T. Mitchell, "WebWatcher: A Tour Guide for the World Wide Web," *Proceedings of IJCAI97*, 1997

Data Mining in Personalization

- P.S. Yu, "Data Mining and Personalization Technologies," *Proceedings of the Conference on Database Systems for Advanced Applications*, 1999
- W. Lin, S.A. Alvarez and C. Rujz, "Collaborative Recommendation via Adaptive Association Rule Mining," *Proceedings of the WebKDD Workshop*, 2000
- B. Mobasher, H. Dai, T. Luo, M. Nakagawa, Y. Sun and J. Wiltshire, "Discovery of Aggregate Usage Profiles for Web Personalization," *Proceedings of the WebKDD Workshop*, 2000
- M. D. Mulvenna, S. S. Anand, and A. G. B··uchner. Personalization on the Net using Web Mining. *Communications of the ACM*, Vol. 43(8):pages 122–125, August 2000.
- B. Mobasher, R. Cooley, and J. Srivastava. Automatic Personalization Based on Web Usage Mining. *Communications of the ACM*, Vol. 43(8):pages 142–151, August 2000.
- C. Lynch. Personalization and Recommender Systems in the Larger Context: New Directions and Research Questions (Keynote Speech). In *Proceedings of the Joint DELOS-NSF Workshop on Personalisation and Recommender Systems in Digital Libraries*, pages 84–88, Dublin, Ireland, 2001.

Social Network

- H. Kautz, B. Selman, and M. Shah. Referral Web: Combining Social Networks and Collaborative Filtering. *Communications of the ACM*, Vol. 40(3):pages 63–65, March 1997.
- B. Wellman. Computer Networks As Social Networks. *Science*, Vol. 293:pages 2031–2034, September 2001.
- G. W. Flake, S. Lawrence, C. L. Giles, and F. M. Coetzee. Self-Organization and Identification ofWeb Communities. *IEEE Computer*, Vol. 35(3):pages 66–67, March 2002.
- E. A. Fox and G. Marchionini. Digital Libraries. *Communications of the ACM*, Vol. 44(5):pages 30–32, May 2001.
- S. Wasserman and K. Faust. *Social Network Analysis: Methods and Applications*. Cambridge University Press, New York, 1994.

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