Seminar Presentation

Information Systems and Machine Learning Lab (ISMLL)

Carlotta Schatten

Outline

Seminar structure and activities

Seminar Topic

Seminar Papers

MSc and BSc Seminar

Recommender Systems Seminar

Recommender Systems are software used by online retailer to suggest products to their users.

- **Description**:
  In this seminar participants will gain a broad overview of Recommender Systems state of the art and different implementations. Among others the students will read papers of top conferences about
- When? Tuesday 12-13.30
- Location: A9

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Seminar tasks and activities:

- One paper per person about a topic and a presentation day are assigned
- Prepare a presentation in a small group (2-3 people):
  - The group has to prepare a presentation
  - The presentation must be submitted in pre-final version to Carlotta Schatten (schatten@ismll.de) one week in advance
  - If the presentation is not well done, part of it, or the complete presentation, will be canceled.
    (Students will be informed a few days in advanced)
- Presenting the work to the class (50% of the mark)
- Submission of the Summary Paper due 4 weeks after term break **03.03.2016** (50% of the mark)

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The group has to prepare a presentation which consists of four parts:

- Introduce the topic
- **Summarize the papers** (This is the main part)
- Underline differences and similarities of the algorithms
- Declare a winning method and why

It is important to:

- Involve the audience, will be counted as part of the mark
- Not omit crucial parts of the paper such as the evaluation, the algorithms, the baselines, etc.
- Try to provide your own interpretation of the models

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The group presents the topic

- The students will present 60 minutes (20 minutes each)
- After that 30 minutes questions and answers
- If you are not allowed to present or you don't attend to the presentation you will get a 5.0 as presentation mark and the exam is failed.

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Summary Paper:

- Will be a paper like document, one for each participant, of exactly 15 pages (not one more not one less)
  - Introduce the topic
  - **Summarize the paper** (This is the main part)
  - Underline differences and similarities of the algorithms of your group
  - Argument why your method is or is not the best of the similar ones seen.
- Submit by the 03.03.2016 three hard copies and one digital copy to our secretary (hinzemelching@ismll.uni-hildesheim.de)
- A template will be provided
- More details in the next lecture

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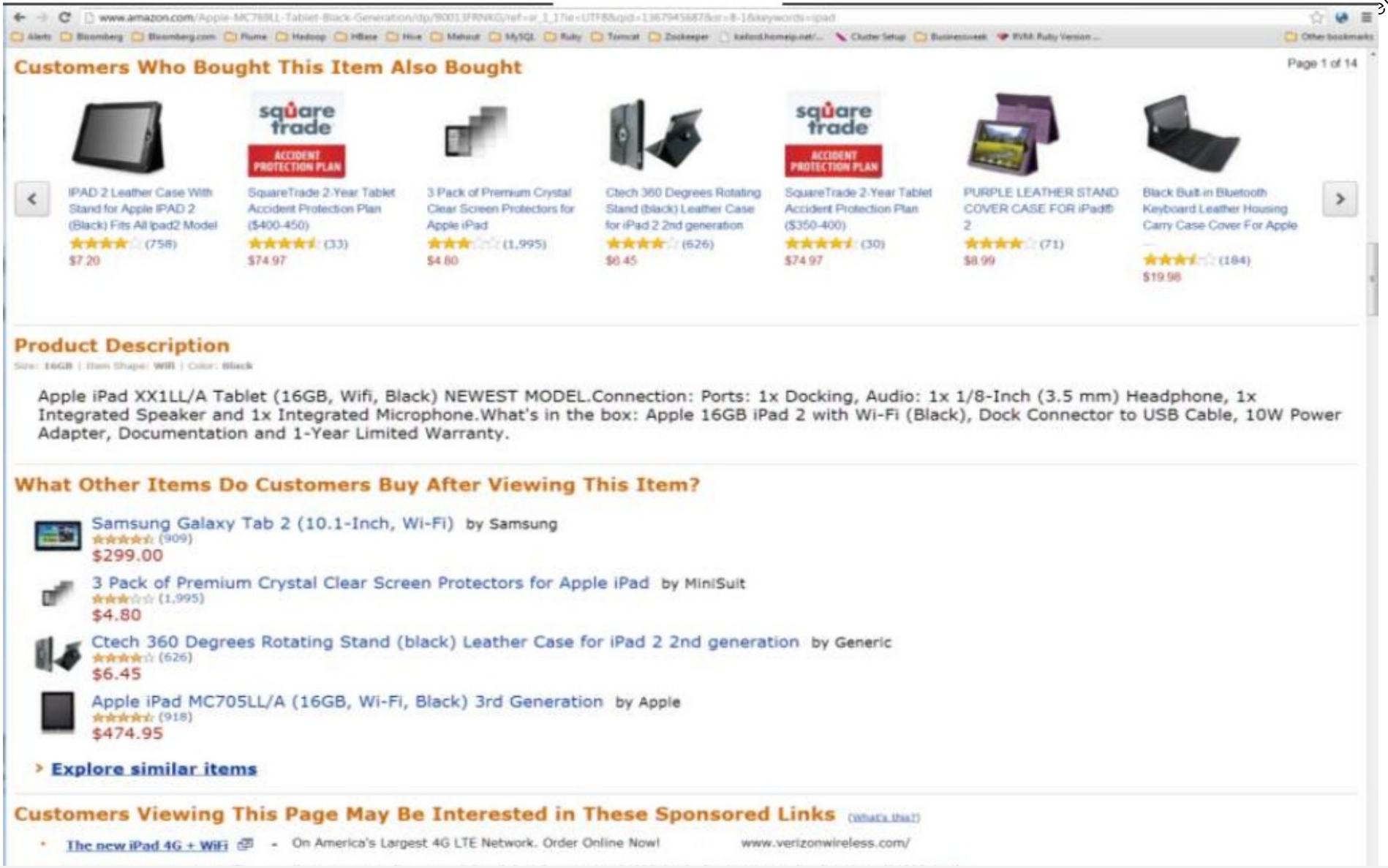
Seminar Plan:

- Two meetings about:
  - Paper reading how to
  - Summary Paper writing how to
- Eleven meetings with students' presentations on different topics
- Submission of the Summary Paper due 4 weeks after term break **03.03.2016**

amazon



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IPAD 2 Leather Case With Stand for Apple IPAD 2 (Black) Fits All Ipad2 Model (758) $7.20

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Ctech 360 Degrees Rotating Stand (black) Leather Case for iPad 2 2nd generation (626) $6.45

SquareTrade 2-Year Tablet Accident Protection Plan ($350-400) (30) $74.97

PURPLE LEATHER STAND COVER CASE FOR iPad® 2 (71) $8.99

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Product Description

Apple iPad XX1LL/A Tablet (16GB, Wifi, Black) NEWEST MODEL.Connection: Ports: 1x Docking, Audio: 1x 1/8-Inch (3.5 mm) Headphone, 1x Integrated Speaker and 1x Integrated Microphone.What's in the box: Apple 16GB iPad 2 with Wi-Fi (Black), Dock Connector to USB Cable, 10W Power Adapter, Documentation and 1-Year Limited Warranty.

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Samsung Galaxy Tab 2 (10.1-Inch, Wi-Fi) by Samsung (909) $299.00

3 Pack of Premium Crystal Clear Screen Protectors for Apple iPad by MiniSuit (1,995) $4.80

Ctech 360 Degrees Rotating Stand (black) Leather Case for iPad 2 2nd generation by Generic (626) $6.45

Apple iPad MC705LL/A (16GB, Wi-Fi, Black) 3rd Generation by Apple (918) $474.95

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7.3
Ratings: 7.3/10 from 322,552 users Metascore: 73/100
Reviews: 1,976 user | 276 critic | 37 from Metacritic.com
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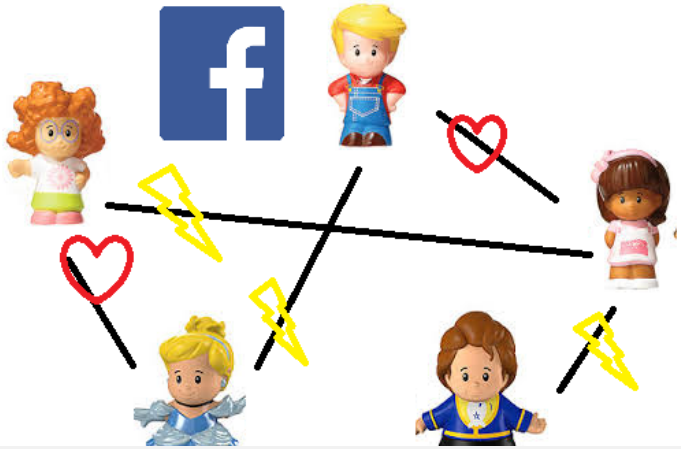

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Matrix Factorization Recommenders' Topics:

1. **08.11** Vanilla Matrix Factorization
2. **15.11** Cold Start
3. **22.11** Online Update
4. **29.11** Implicit feedback
5. **06.12** Ranking and Recommendation
6. **13.12** Collective Matrix Factorization
7. **20.12** Time aware
8. **10.01** Social Regularization
9. **17.01** Recommendation in signed social networks
10. **24.01** Graph knowledge
11. **31.01** Tag Recommendation

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- **Vanilla Matrix Factorization**
  - Koren, Yehuda, Robert Bell, and Chris Volinsky. **Matrix factorization techniques for recommender systems.** Computer 42.8 (2009)
  - Hoyer, Patrik O. **Non-negative matrix factorization with sparseness constraints.** Journal of machine learning research(2004)
  - Salakhutdinov, Ruslan, and Andriy Mnih. **Probabilistic matrix factorization.** NIPS. Vol. 20. 2011.
- **Cold Start**
  - Pilászy, I. and Tikk, D. (2009). **Recommending new movies: Even a few ratings are more valuable than metadata.** In RecSys. 2009
  - Park, Seung-Taek, and Wei Chu. **Pairwise preference regression for cold-start recommendation.** In RecSys. 2009.
  - Li, B., Zhu, X., Li, R., Zhang, C., Xue, X., and Wu, X. (2011). **Cross-domain collaborative Filtering over time.** RecSys 2011

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- **Online Update**
  - Sarwar, Badrul, et al. **Incremental singular value decomposition algorithms for highly scalable recommender systems**. CCIS 2002.
  - Vinagre, João, et al. **Fast incremental matrix factorization for recommendation with positive-only feedback.** UMAP 2014.
  - Matuszyk, Pawel, et al. **Forgetting methods for incremental matrix factorization in recommender systems.** ACM Symposium on Applied Computing, 2015.
- **Implicit feedback**
  - Pilászy, István, et al. **Fast als-based matrix factorization for explicit and implicit feedback datasets.** RecSys 2010.
  - Fang, Yi, and Luo Si. **A latent pairwise preference learning approach for recommendation from implicit feedback.** CIKM 2012.
  - Hu, Yifan, Yehuda Koren, and Chris Volinsky. **Collaborative filtering for implicit feedback datasets.** ICDM 2008.

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- **Ranking and Recommendation**
  - Shi, Yue, et al. **CLiMF: learning to maximize reciprocal rank with collaborative less-is-more filtering.** RecSys 2012.
  - Shi, Yue, et al. **List-wise learning to rank with matrix factorization for collaborative filtering.** RecSys 2010.
  - Lee, Guang-He, et al.**LambdaMF: Learning Nonsmooth Ranking Functions in Matrix Factorization Using Lambda.** ICDM 2015
- **Collective Matrix Factorization**
  - Bouchard, Guillaume, et al. **Convex Collective Matrix Factorization.** AISTATS 2013.
  - Nickel, Maximilian, et al. **A three-way model for collective learning on multi-relational data.** ICML 2011
  - Singh, Ajit P., et al. **Relational learning via collective matrix factorization.**SIGKDD 2008.

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- **Time aware**
  - Koren, Yehuda. **Collaborative filtering with temporal dynamics.** Communications of the ACM53.4 (2010): 89-97.
  - Karatzoglou, Alexandros, et al. **Multiverse recommendation: n-dimensional tensor factorization for context-aware collaborative filtering.** RecSys 2010.
  - Pragarauskas, H., et al. **Temporal collaborative filtering with bayesian probabilistic tensor factorization.** SIAM (2010).
- **Social Regularization**
  - Ma, Hao, et al. **Sorec: social recommendation using probabilistic matrix factorization.**CIKM 2008.
  - Jamali, Mohsen, et al. **A matrix factorization technique with trust propagation for recommendation in social networks.** RecSys 2010.
  - Ma, Hao, et al. **Recommender systems with social regularization.** WSDM 2011.

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- **Recommendation in signed social networks**
  - Tang, J., et al. **Recommendations in signed social networks.** WSDM 2016
  - Song, D., et al. **Recommending Positive Links in Signed Social Networks by Optimizing a Generalized AUC.** AAAI 2015
  - Song, D., et al. **Efficient latent link recommendation in signed networks.** SIGKDD 2015
- **Graph knowledge**
  - Menon, Aditya Krishna, et al. **Link prediction via matrix factorization.** ECML 2011.
  - Gu, Quanquan, Jet al. **Collaborative Filtering: Weighted Nonnegative Matrix Factorization Incorporating User and Item Graphs.** SDM 2010.
  - Nickel, Maximilian et al. **Factorizing yago: scalable machine learning for linked data.** WWW 2012.

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Groups

- Avoid staying with people of your same country:
  with different backgrounds you can help each other
- When you select your topic consider that older papers could be easier, and/or less interesting, and/or well known.
  They might be easier to understand but we expect you to present them better as more material is available online.