

Fast ALS-based tensor factorization for context-aware recommendation from implicit feedback

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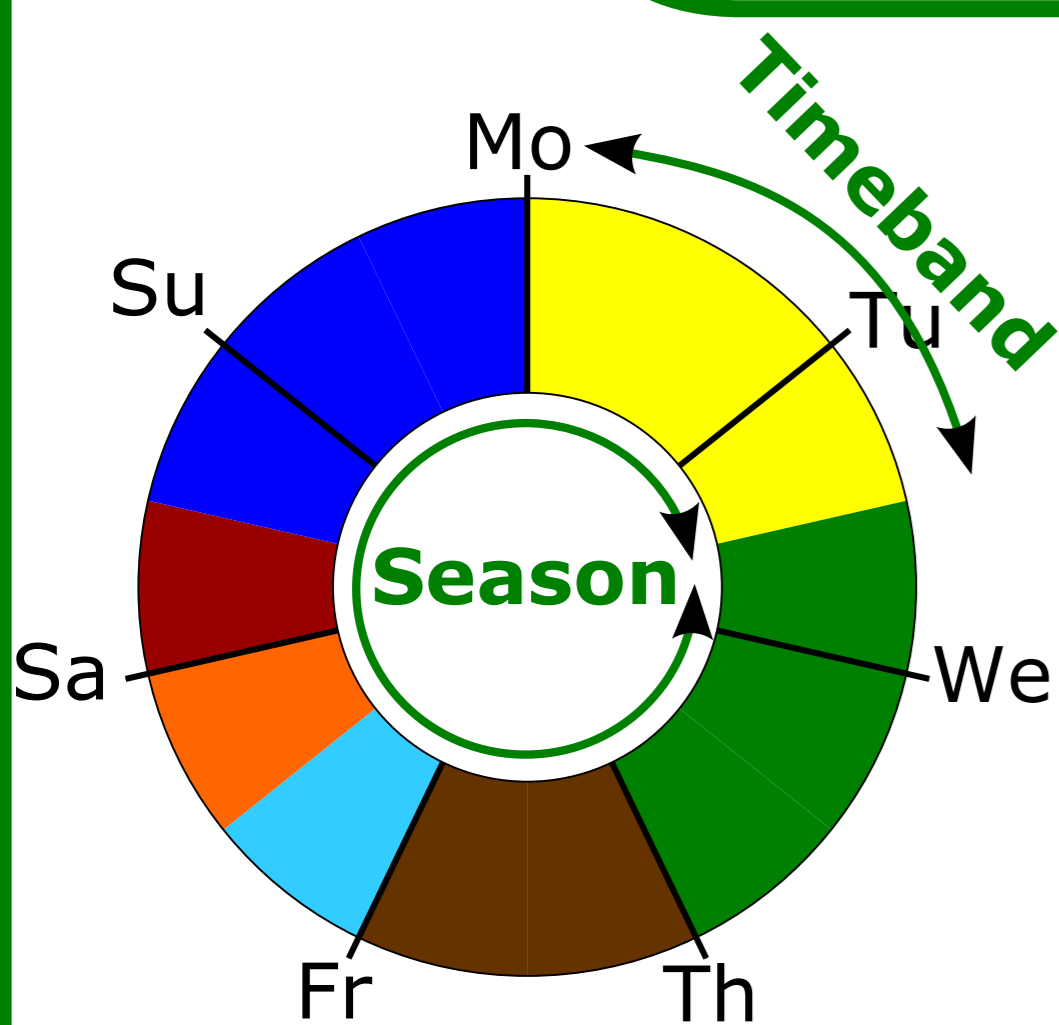
Context information

Context: any information associated with events

Context-state: the value of the context belonging to the event

Context-aware recommendation: different itemlist to the same user in different context states

Seasonality



- periodicity
- behaviour in a timeband is similar in seasons
- length of timebands can be equal or different
- context-state of event: corresponding timeband
- e.g.: days of week

| User | Item | Date | Context |
|------|------|------------|---------|
| A | 1 | 12/07/2010 | yellow |
| B | 2 | 15/07/2010 | brown |
| A | 2 | 15/07/2010 | brown |
| ... | ... | ... | ... |
| A | 1 | 19/07/2010 | yellow |

Sequentiality

User A $i_1 i_2 i_4 i_1 i_2 i_3 i_1 i_2$

User B $i_5 i_3 i_1 i_2 i_4 i_7 i_8 i_2 i_1 i_2 i_4$

User C $i_7 i_5 i_2 i_4 i_3 i_8 i_7$

- previously bought item(s) by the user
- association rule like information in factorization framework
- can learn negated rules

Implicit feedback problem

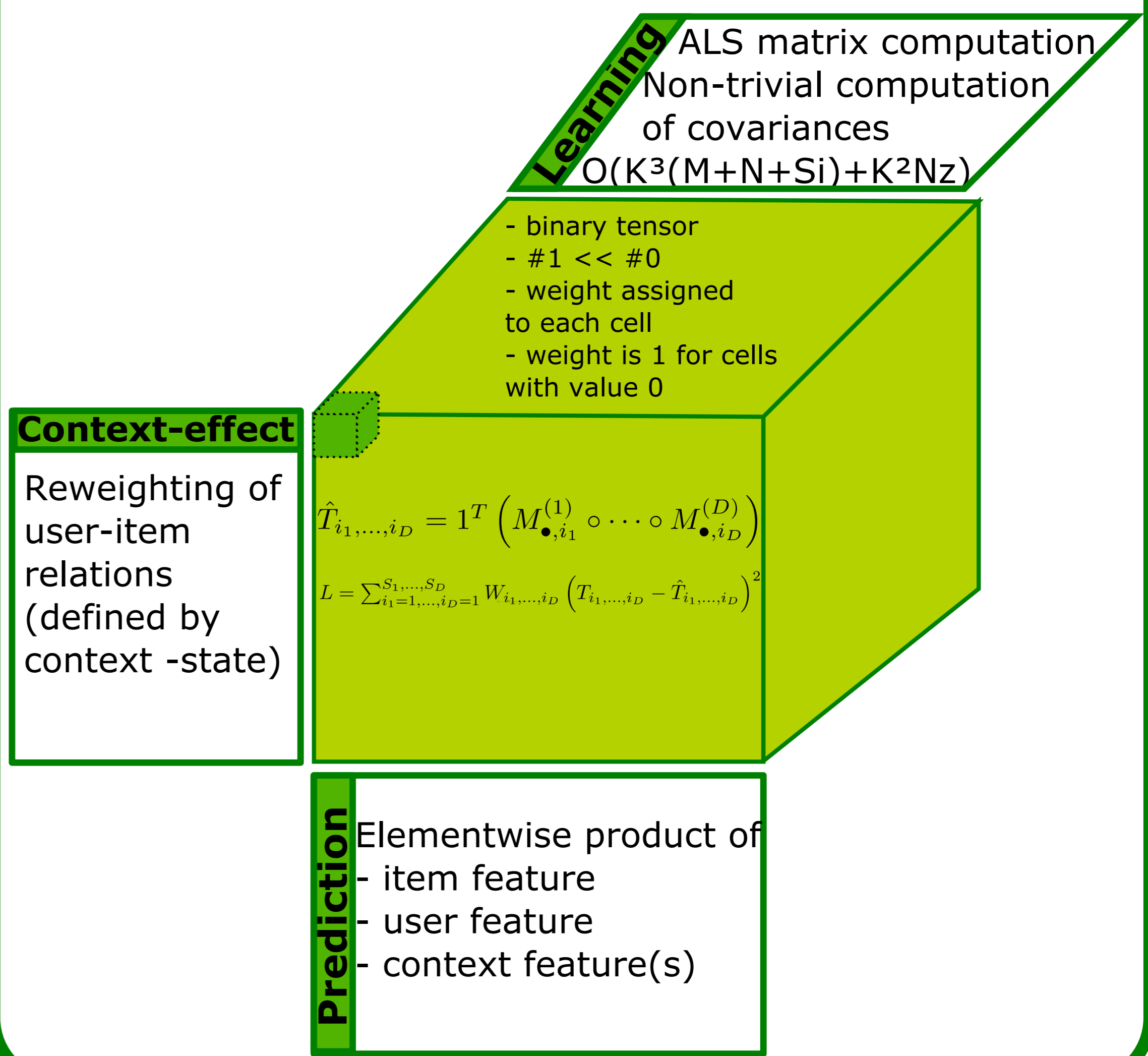
Properties

- preferences coded implicitly in transactional data
- noisy positive feedback
- no negative feedback
- harder problem than explicit counterpart

Importance

- easier to collect than explicit feedback
- every user provides it
- common in practice

iTALS algorithm / model



Results

