

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

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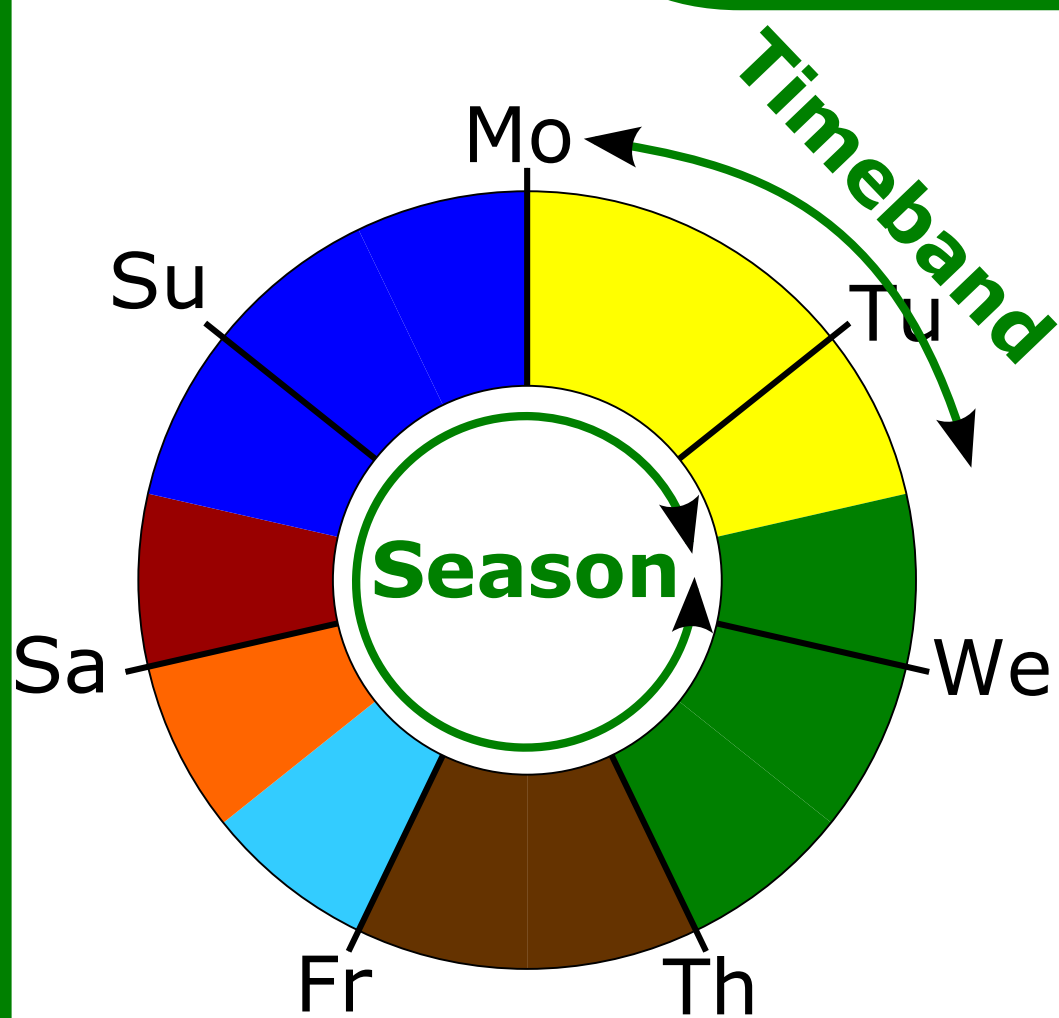
## Context information

**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

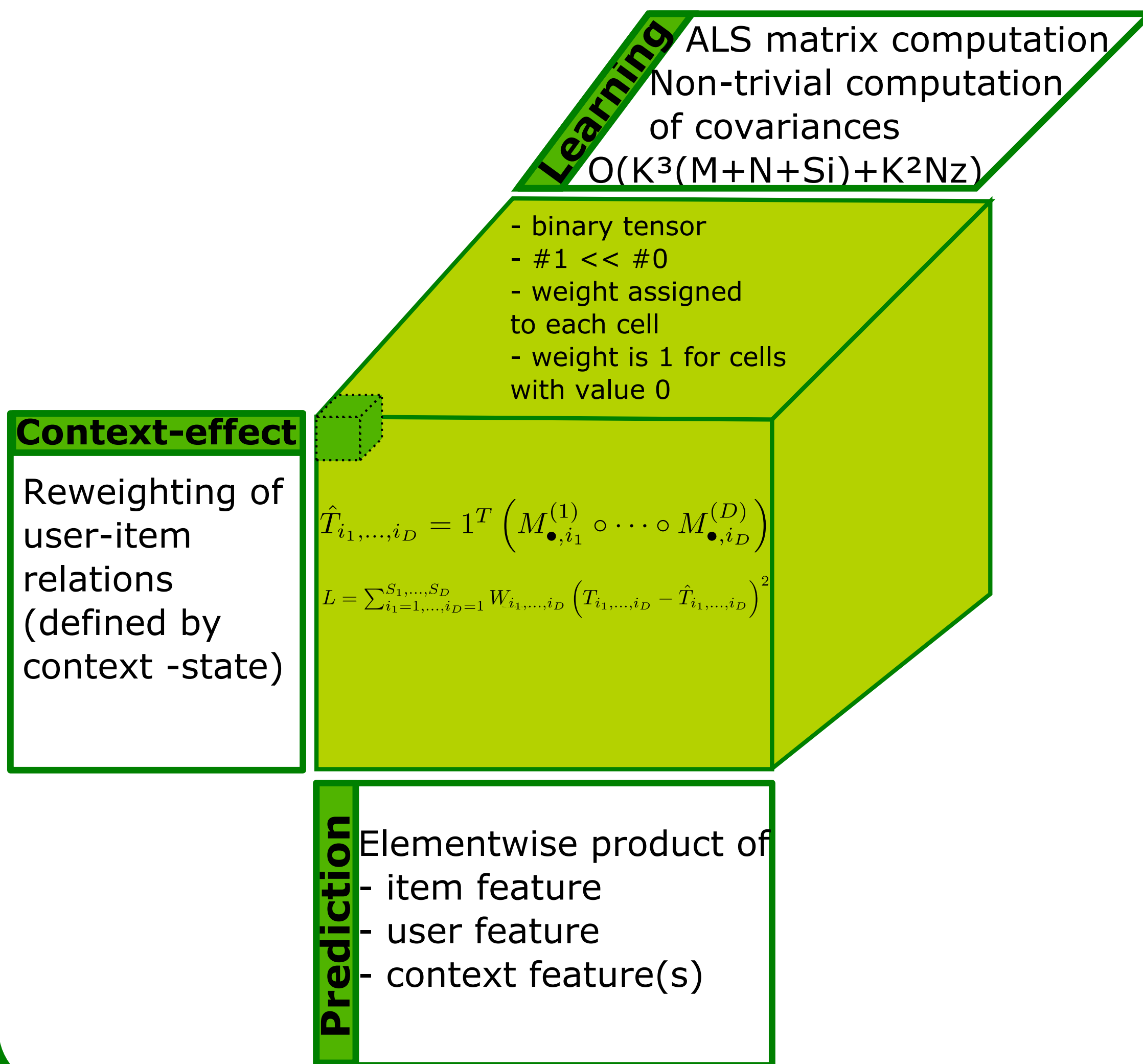
### Properties

- 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

