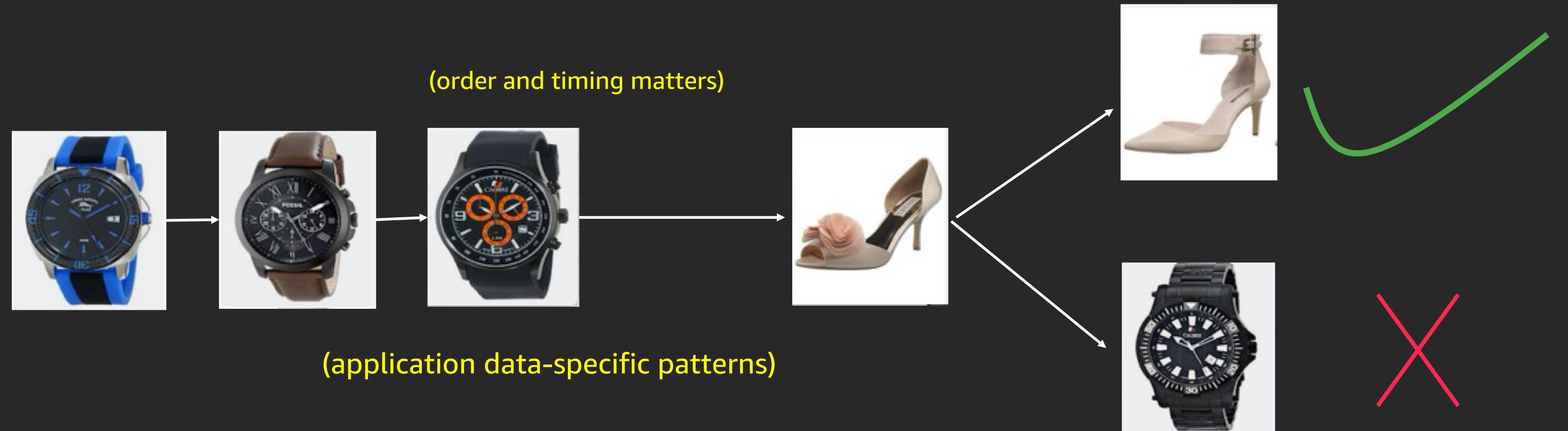


Modeling for Personalization

Fundamental insight

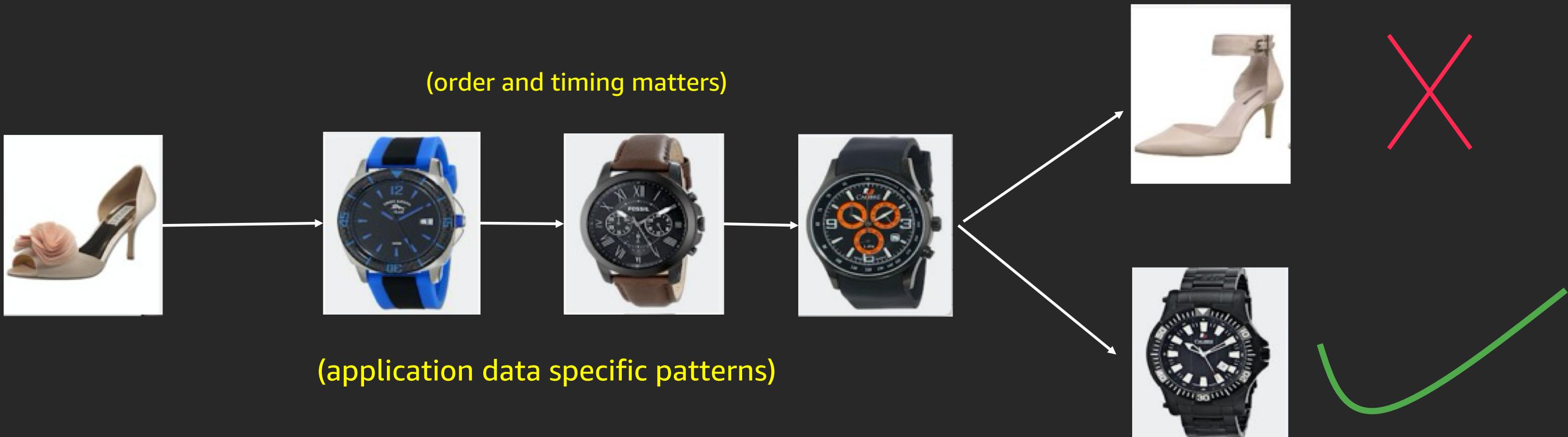
The evolution of historical interest and dis-interest is a good indicator of future preferences



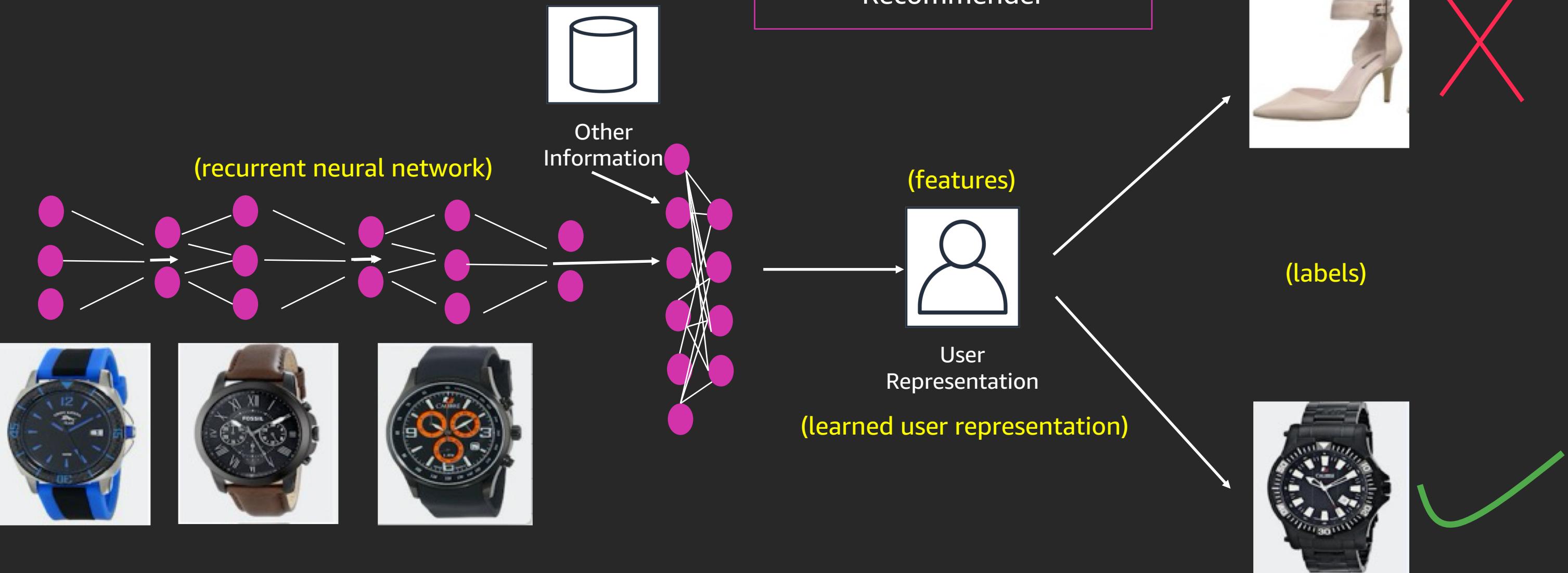
Modeling for Personalization

Fundamental insight

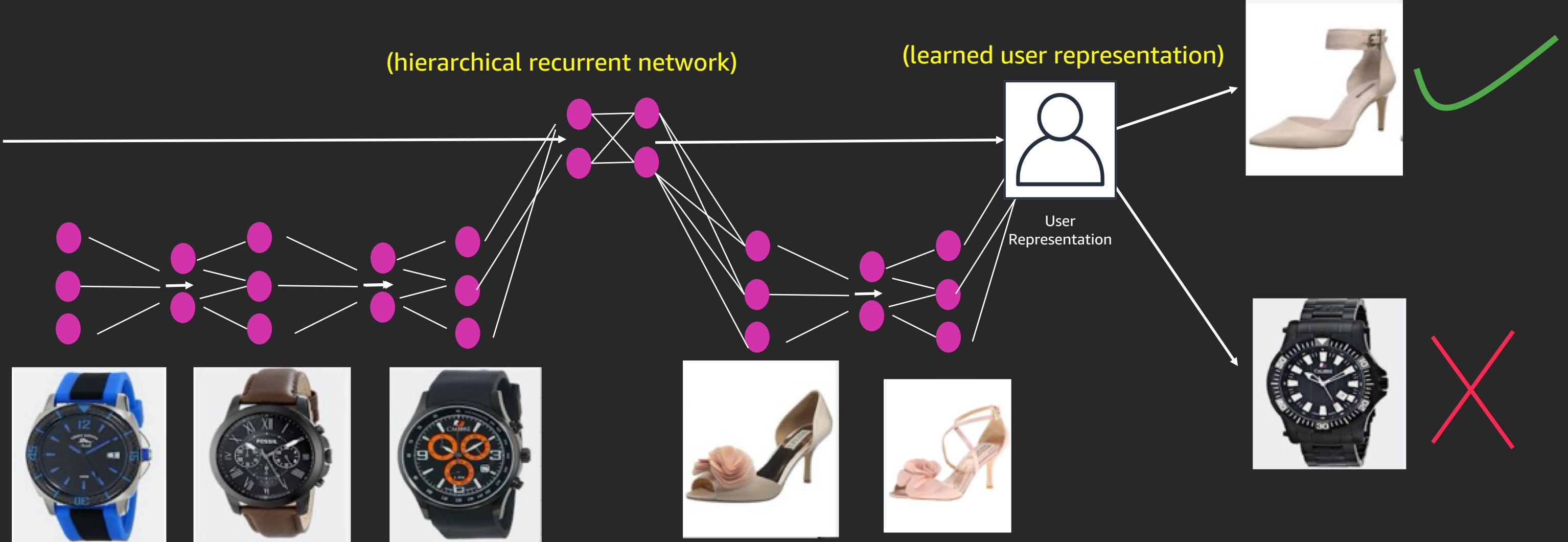
The evolution of historical interest and dis-interest is a good indicator of future preferences



Sequential modeling



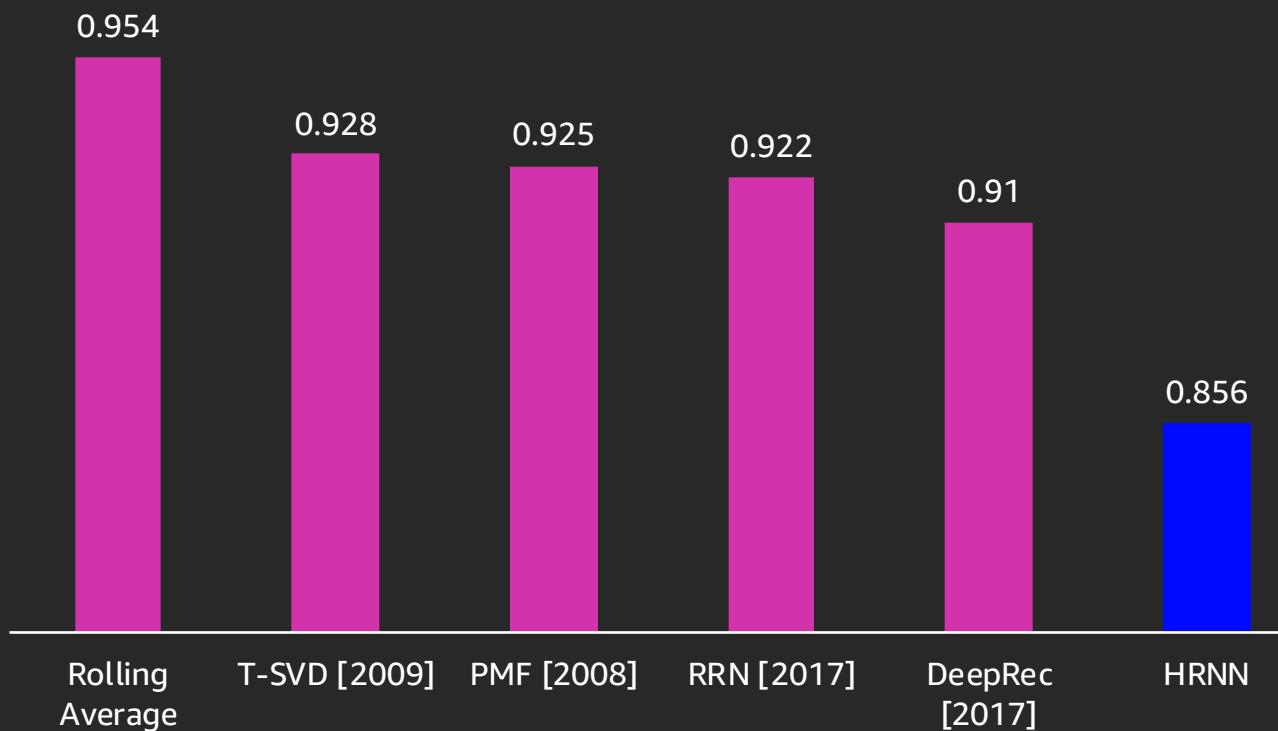
Modeling Sessions



Available in Amazon Personalize as
Hierarchical Recurrent Neural Network (HRNN)

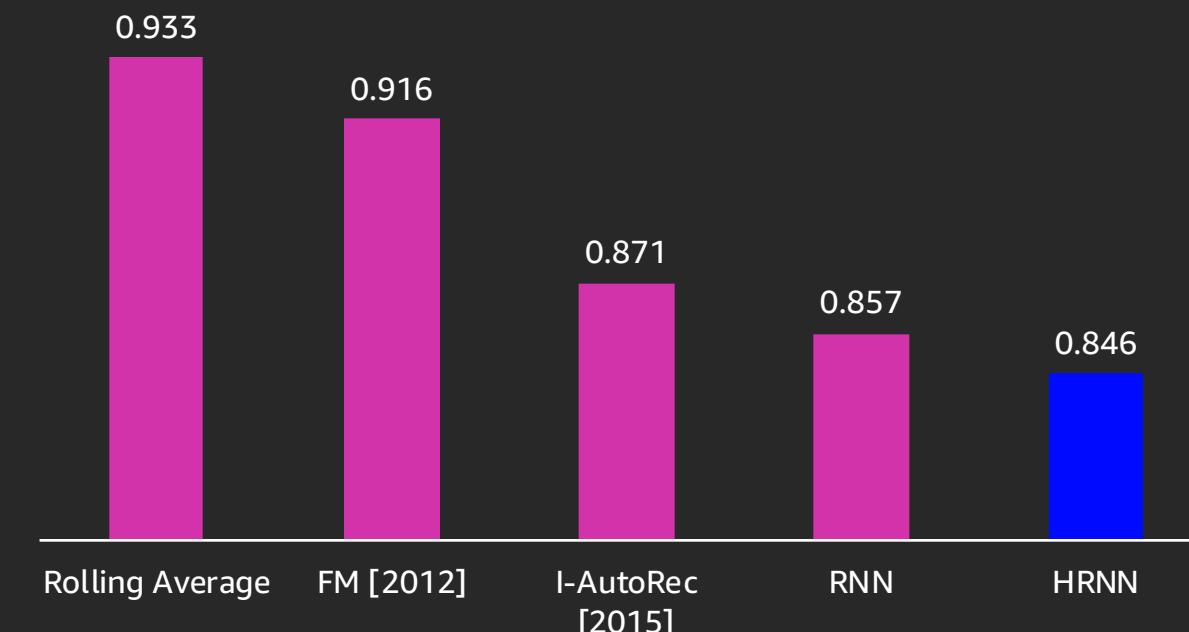
State of the Art Performance

■ Rolling Average ■ T-SVD [2009] ■ PMF [2008]
■ RRN [2017] ■ DeepRec [2017] ■ HRNN



Ratings RMSE on Netflix
98 MM interactions, 500k users, 18k items

■ Rolling Average ■ FM [2012]
■ I-AutoRec [2015] ■ RNN



Ratings RMSE on MovieLens
20 MM interactions, 173k users, 131k items

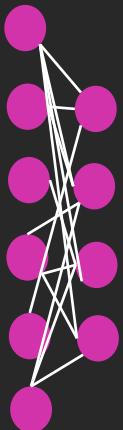
Large Parameter Space – HPO and AutoML

SIMS



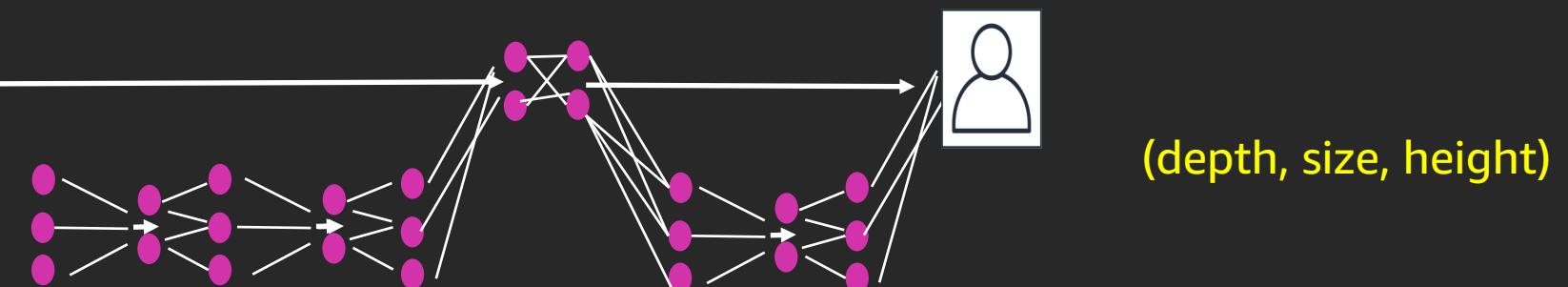
(time decay)

DeepFM



(depth, size)

HRNN



(depth, size, height)

Automatic within algorithm
parameter tuning (**HPO**)
Automatic algorithm
selection (**AutoML**)