What You'll Buy Next & When You'll Buy It

Amazon S3

Recommender systems use large amounts of proprietary data gathered for several years

S3 provides:
- Unlimited Storage
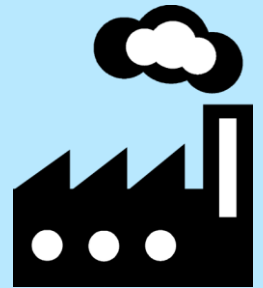- Immediate Access
- Security

Amazon EMR

Recommender systems require robust computational strength to manipulate high volume data with complex algorithms

Amazon EMR's computing structure is streamlined for big data capabilities
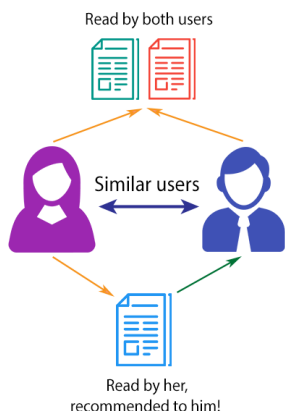
Spark ML

Modern **Recommender systems** are complex and intentional algorithms with many stages

Spark ML's algorithms interface with big data applications and allow for recommender system creation for free with few key strokes

Traditional Engine
Methods of Action

COLLABORATIVE FILTERING

Read by both users

Similar users

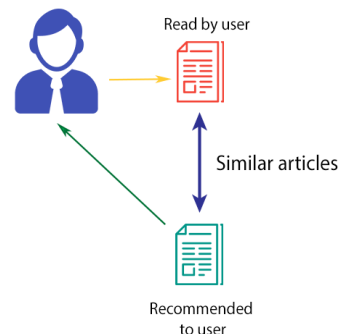Read by her, recommended to him!

Individual Past Behavior

Choices specific to individual user frame recommendations

Analogous User Traits

Choices of like users enhance recommendations

CONTENT-BASED FILTERING

Read by user

Similar articles

Recommended to user

Xiyang Xu (xu000334@umn.edu) | Kitlyn (Hui-Lun) Kuo (kuo00016@umn.edu) | Yanlun Ren (ren00052@umn.edu)
Raghuveer Rao Vijjini (vijji002@umn.edu) | Sydney Jiang (jian0457@umn.edu) | Wade Wimer (wimer008@umn.edu)

Recommender Systems

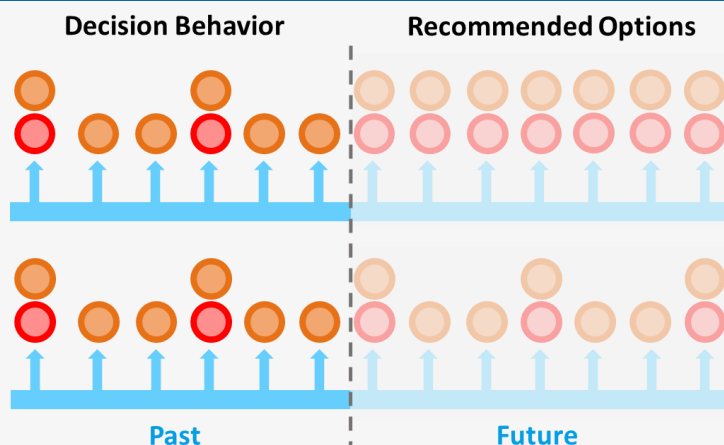## Predictive vs. Traditional System

Traditional Systems:
Suggest products that customers want, but do not address when they may want them

"Predictive" System:
Our model introduced time as a predictive factor, providing helpful reminders rather than ads

Decision Behavior   **Recommended Options**

Past   **Future**

Example Use Cases

Grocery

User:
Sydney

- Healthy purchases on Monday afternoon
- Snacks Weekend nights

Monday Afternoon Basket

- While wheat bread
- Tomatoes
- Coconut Milk
- Lemon Juice

Sunday Evening Basket

- Chocolate nuts
- Chocolate Mint Ice Cream
- Tortilla Chips
- Case Sugar

eCommerce

User:
Kitlyn

- Browse app 8pm weekly
- Prefers health products

Purchased Item

User x Item Features

Recommender System:
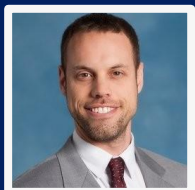
- Toothpaste
- Repurchase frequency: monthly
- 90% repurchase rate

- 30 days since last toothpaste order
- Co-purchase with mouthwash

Recommend toothpaste and mouthwash a month from her last purchase.

Stock Market

User:
Wade

- Trades once each week
- Browses app daily 6pm
- Prefers tech stocks

Purchased Item

User x Item features

Recommender System:

- APPL stock
- High growth potential
- Technology sector

- Repurchase stock in 10 days
- 30% of user's portfolio

Recommend purchase MSFT in 10 days from repurchase AAPL stock.