

# Sequential Indicator & More about Evaluation

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# Average Precision(AP)

```
for i,p in enumerate(predicted):  
    if p in actual and p not in predicted[:i]:  
        num_hits += 1.0  
        score += num_hits / (i+1.0)
```

- Prediction list는 order가 중요하다. 반면에 true list에서의 order는 중요치 않다.
- 상위 순위의 prediction item이 실제 click한 list에 있으면 더 정확도가 높은 것으로 판단.
- # of hits 가 높아야 함.

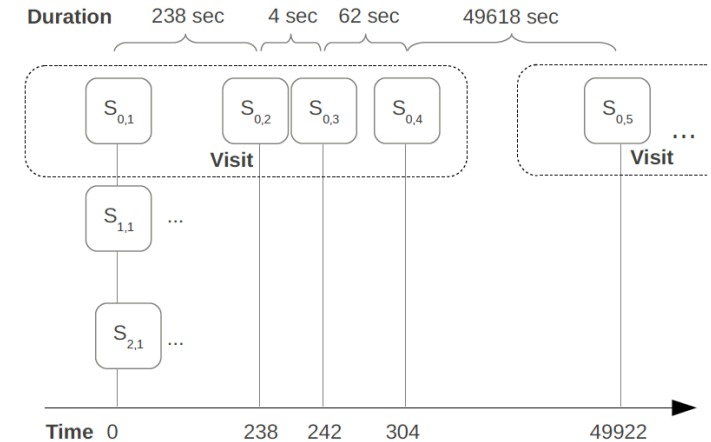
# MAP@3 Result

- Data: Userid, itemid, target
- Result: map@3 = 0.330689

# Sequential Indicator -Rendle

- session index in descending order:  $n_u - j$
- number of sessions in the next 60 seconds:  $|\{j' > j : |t(s_{u,j}) - t(s_{u,j'})| < 60\}|$
- number of sessions in the previous 60 seconds:  $|\{j' < j : |t(s_{u,j}) - t(s_{u,j'})| < 60\}|$
- visit index:  $l$
- duration of this session:  $d(s_{u,j})$
- duration of previous session:  $d(s_{u,j-1})$
- duration of next session:  $d(s_{u,j+1})$
- duration of next next session:  $d(s_{u,j+2})$
- duration of next next next session:  $d(s_{u,j+3})$
- session index:  $j$

User	Item	Time	Session
0	1760350	0	$S_{0,1}$
0	1774722	0	
0	786313	0	
1	1775029	4	$S_{1,1}$
1	1902321	4	
1	462104	4	
2	1774509	15	$S_{2,1}$
2	1774717	15	
2	1775024	15	
...	...	...	...
0	1774957	238	$S_{0,2}$
0	1775024	238	
0	696419	238	
...	...	...	...
0	1928678	242	$S_{0,3}$
0	2105464	242	
0	647356	242	
...	...	...	...
0	1774708	304	$S_{0,4}$
0	1775009	304	
0	1928678	304	
...	...	...	...
0	372259	49922	$S_{0,5}$
0	458026	49922	
0	563514	49922	
...	...	...	...



- User가 시스템을 많이 사용했었다면 즉, 현재까지 사용한 Session의 총 수가 많아 질수록 추천을 accept할 확률이 높아진다(낮아질 수도 있다).
- 짧은 시간 내에 어느 정도의 session이 있었나
- session의 duration이 너무 짧으면 지금 recommendation에 집중하지 않는다는 것

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- Binary dummy variable
- Duration  $\Rightarrow$  integer value  $\Rightarrow$  truncate

