

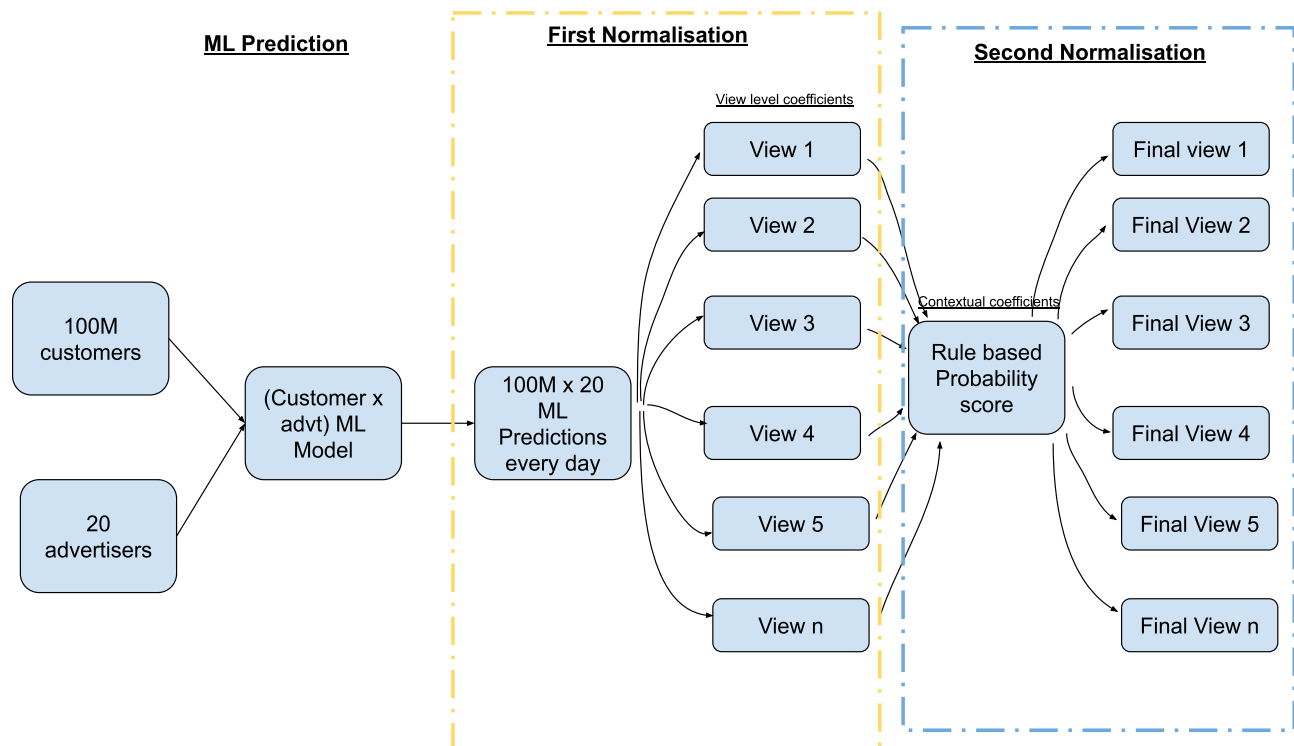
## RTCS (Real Time Campaign Selection): (Delivered up to 12% revenue boost)

**Goal :** Pick the best possible campaign for a specific user, on a view, for a specific time within milliseconds

- To pick up campaign every time user opens the app we calculate AOV score for every campaign
- AOV is a function of Predicted CTR and eCPM
- CTR is provided by ML team and eCPM is provided by business
- Backend team will impute ctr and eCPM in AOV formula at real time and then identify winning campaign
- Winning campaign will be shown to the user

PS: Paytm App has multiple pages/screens, every screen has multiple views and each should have different advertisement banner

### ML System Architecture



**CTR Prediction** for 100M customer for each advertiser using ML Model and the stored in s3

Since there are multiple views on the screen, so **calibrating ML Predicted scores at view level at real time**

**Combining ML Predicted scores with rule based score** and at real time

### **ML System:**

- Given the cost constraints, we can only do the prediction at customer x advertiser level
- But in real time, scoring is required at view level because once user lands on screen, screen contains multiple views
- So we trained a separate model to calibrate our predicted scores at view level. We identified view level coefficients to calibrate the probability scores at view level. These coefficients were provided to BE (Backend) team through API, and they do First Level of Normalisation at realtime
- Also during our experiments we realized that if we combined the first normalized ML score with Rule Based (contextual) scores, we are getting better logloss (our offline performance metric). So we also provided additive coefficients to combine the first norm and contextual scores. This final score is called the Second normalized score. This score is also calculated in real time by the BE team.
- Second Norm score is the final score, which is actually **customer x advertiser x view** level score.

### **Final AOV Calculation:**

- Second norm score will be combined with eCPM to generate final AOV score

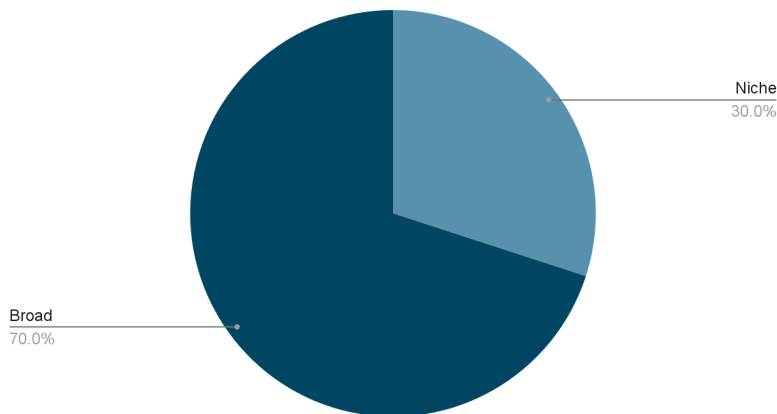
$$\text{Predicted CTR} \times \text{eCPM} = \text{AOV Score}$$

- Based on highest AOV, the winning campaign will be decided and this winning campaign's banner will be shown to the user.

## Audience Targeting: (Boosted Platform ctr by 13%)

**Goal:** Identify High engaging audience to target for advertiser based on budget and other requirements (high engaging, active users etc)

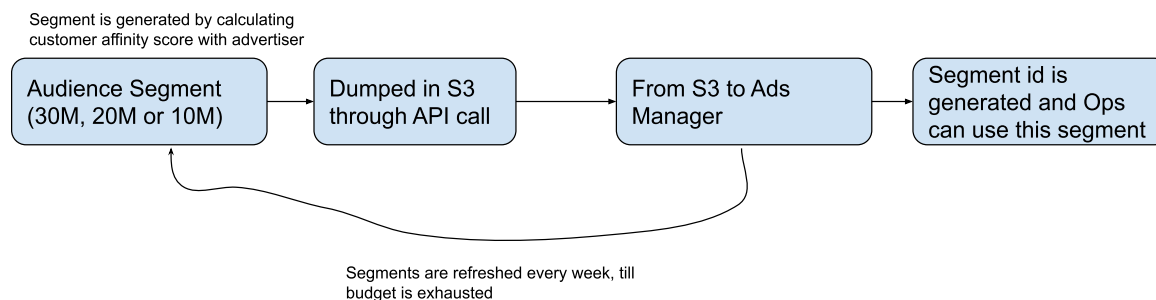
Out of 100M audience



### Process:

- Based on requirements from operations (Ops) team, we give audience segment for every advertiser whose campaign is live during current period
- Frequency of updating audience segment is weekly
- Its expected that segment audience will have high affinity with the advertiser and hence can deliver more CTR/Engagement/Installs/Purchase/Lead (campaign objectives)

### ML Architecture:



These are a few of the key projects that I have delivered. Some other projects like delivering scratch cards to highly engaging users and identifying customer cohorts for quick targeting, are other projects. Let me know if I need to share these projects in more detail.

Thanks,  
Priyanshu