DATASCIENCESALON
NEW YORK

ML in Marketing Retention

Ruixin Zheng
Lead Marketing Analyst
DirecTV

User Case Introduction

When a customer wants to disconnect the service, they need to call the call center to talk with customer representative. Our agents will try the best to keep the customers.

What can we do in the call?

DATASCIENCESALON
NEW YORK

Offer Design

- Provide different offer/discount options based on the margin
  Offer Value < Margin
- Only offer $0 (No Offer), $5, $10.....$90
- Example: If the company earn $20 margin from a customer,
  then we can offer $0, $5, $10 or $15 discount.

Which offer should we give to reduce the churn rate?

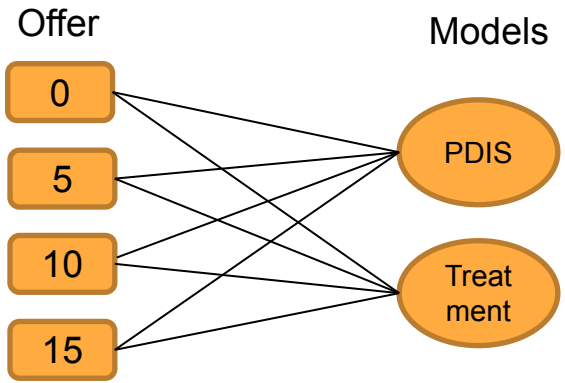
$15?

Maybe? But we also need to save money

DATASCIENCESALON
NEW YORK

How do ML models help us make the decision?

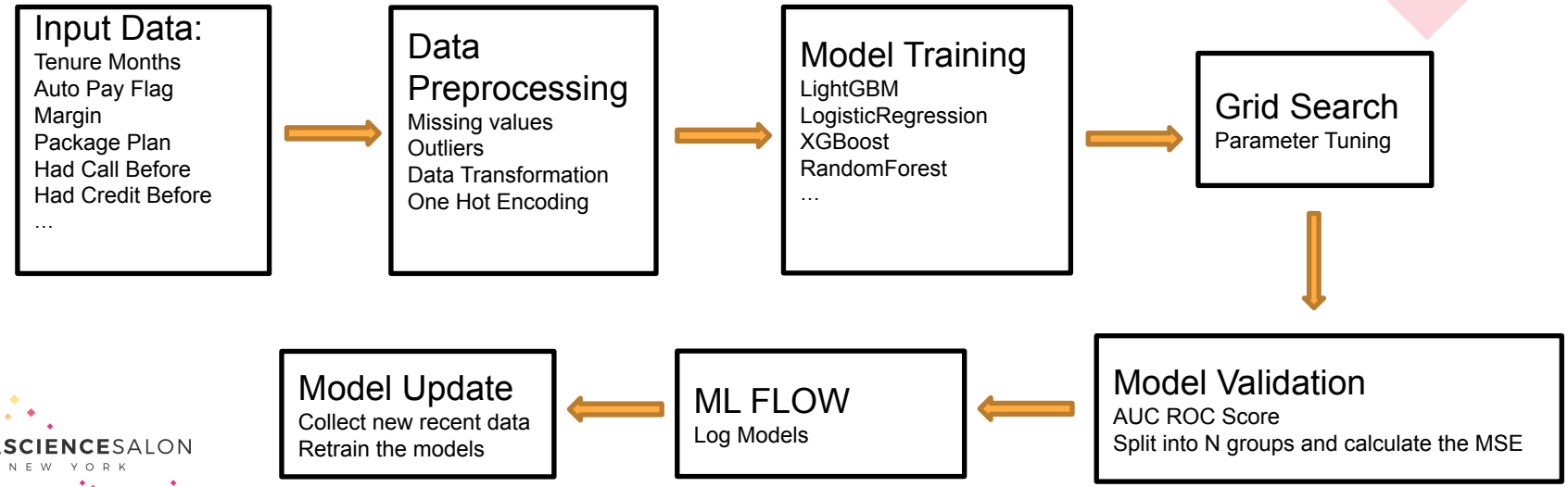
- What is the probability that the customer will disconnect (PDIS) /accept the offer if we give offer X.
- Collect all callers in past 200 days to build the models for each type of offer
- Each type of offer has 2 models – PDIS model and treatment model
- Example: If the margin from a customer is $20, then there will be 8 models for this customers.



DATASCIENCESALON
NEW YORK

ML Models

- PIDS Model – predict the probability that the customer will disconnect
- Treatment Model – predict the probability that the customer will take the offer(treatment)
- Call Probability Model – predict the probability that the customer will give a call



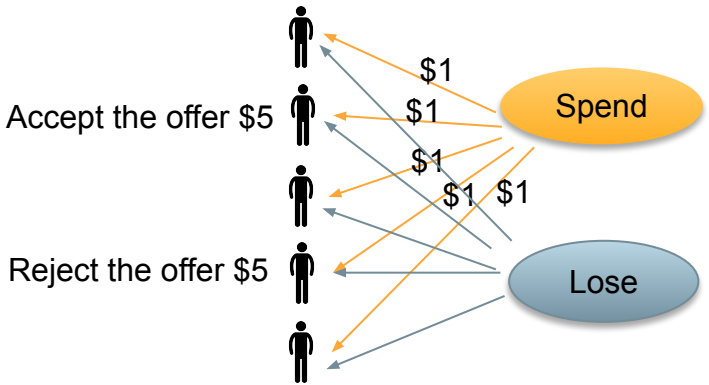
DATASCIENCESALON
NEW YORK

Margin Calculation

New Margin = Margin – P(call) * P(PDIS) * Margin – P(call) * P(treat) * Offer_Value

Money we lose if they disconnect

Money we spend if they accept the offer



Think about offer assignment

If there are 5 customers – 3 have low margin and 2 have high margin. The budget limit is $25. Do you give each person $5? Or only equally assign the offer to 3 low-margin customers to reduce churn rate? Or equally assign the offer to 2 high-margin customers to earn more profit? Or something else?

DATASCIENCESALON
NEW YORK

How to assign the offer to balance the margin, the churn rate and the company budget

It depends on your business goal...

- Minimize PDIS & Restrict the Money Spend

From Offer	To Offer	Old P(PDIS)	New P(PDIS)	Delta P(PDIS)	Old Est Spend	New Est Spend	Delta Est Spend	Ratio of PDIS/Spend	Rank
0	5	A	B	B-A	X	Y	Y-X	(Y-X)/(B-A)	5
0	10	...	...	...	...	...	...	...	2
0	15								3
5	10								1
5	15								6
10	15	...	...	...	...	...	...	...	4

- Maximize Margin & Restrict the PDIS

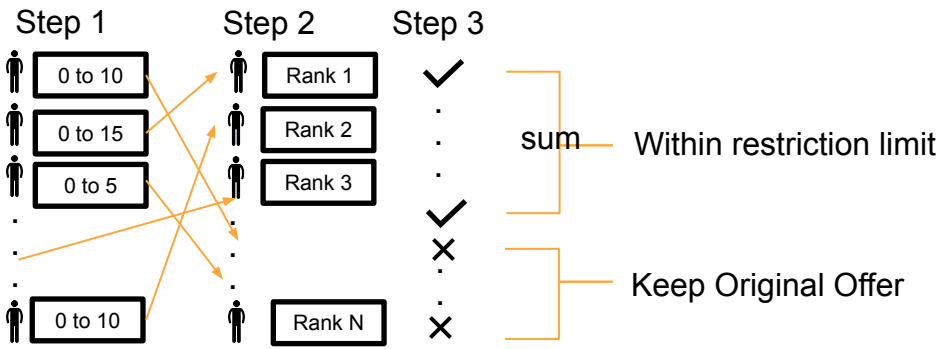
From Offer	To Offer	Old Est Margin	New Est Margin	Delta Est Margin	Old P(PDIS)	New P(PDIS)	Delta P(PDIS)	Ratio of Margin/PDIS	Rank
0	5	A	B	B-A	X	Y	Y-X	(Y-X)/(B-A)	5
0	10	...	...	...	...	...	...	...	2
0	15								3
5	10								1
5	15								6
10	15	...	...	...	...	...	...	...	4

- Maximize Margin & Restrict the Money Spend
- .....

DATASCIENCESALON
NEW YORK

Optimization Process

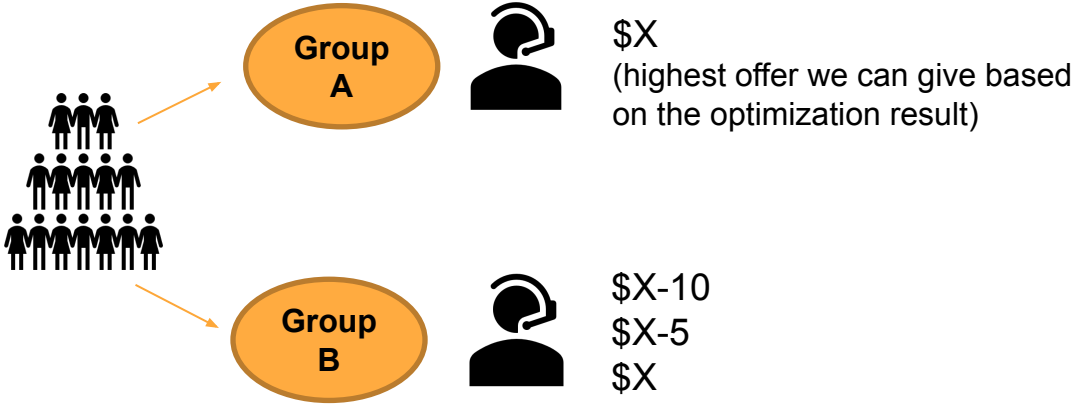
1. For each customer, we pick the offer path starting from the lowest-value offer with highest-priority rank
2. Rank all customers based on the ratio.
3. Start assgining the new offer while we also need to sum total estimated PDIS/Spend. We stop assigning the new offer until we reach the restriction limit.



DATASCIENCESALON
NEW YORK

We need to explore more and think more

Ladder Model (Future)



Build PDIS and Treatment models with and without the “ladder”

DATASCIENCESALON
NEW YORK

DATASCIENCESALON
NEW YORK

Let's Connect on

LinkedIn

DATASCIENCESALON
NEW YORK