



CAN YOU CHURN IT DOWN?

DAIHONG CHEN

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MIHIR BHAGAT

PROJECT GOAL: PREDICT CHURN RATE

DATA INCLUDED

T-MOBILE (LAST 8 YEARS)

CHURN RATE: ↓ 71%

STOCK PRICE: ↑ 538%

ACCOUNT LENGTH

LOCATION (STATE)

PHONE NUMBER

PLAN: INT'L, VOICE PLAN

MINUTES: DAY, EVENING, NIGHT

TOTAL CHARGES

CELL PHONE INDUSTRY

ACQUISITION COST: \$350

RETENTION COST: \$50

OUR PROCESS



DATA: KAGGLE



DESIGN: PANDAS & SKLEARN



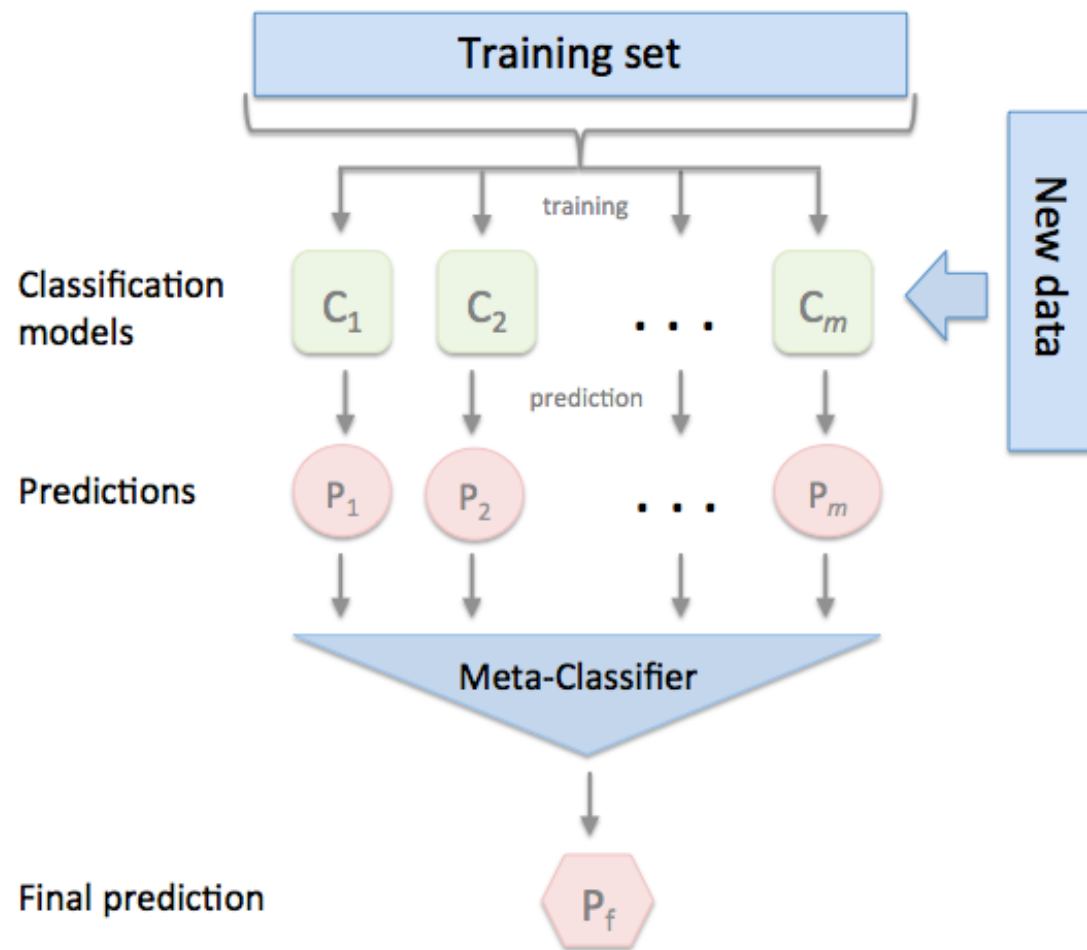
PRE-PROCESS: CATEGORICAL → BINARY

INT'L PLAN, VOICE MAIL PLAN



FEATURE ENGINEERING

REMOVED PHONE NUMBER AND STATE, ADDED TOTAL CHARGE



WHAT IS STACKING?

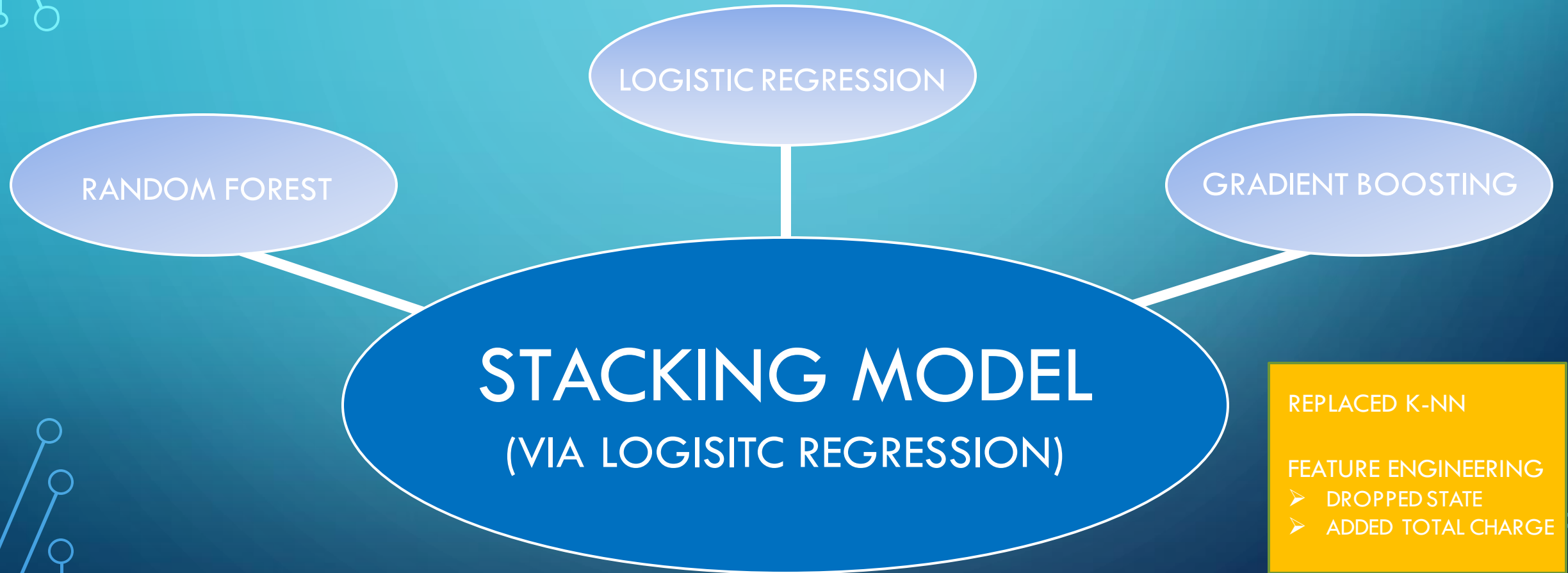
ENSEMBLE MODEL

COMBINES MULTIPLE CLASSIFICATION MODELS

BASELINE MODEL



FINAL MODEL



REPLACED K-NN

FEATURE ENGINEERING

➤ DROPPED STATE

➤ ADDED TOTAL CHARGE

MODEL IMPROVEMENT

	BASLINE MODEL	FINAL MODEL
ACCURACY SCORE	.938	.984
PRECISION	.811	1.0
RECALL	.793	.888
F-1 SCORE	.802	.934

OPTIMIZING FOR RECALL



OF THE CUSTOMERS WHO WILL CHURN, HOW MANY DID WE IDENTIFY?

89%

*BASELINE → FINAL: 12% IMPROVEMENT



FLASK APPLICATION

RECOMMENDATIONS

DATA COLLECTION

NON-CALL USAGE

CUSTOMER
DEMOGRAPHICS

CLV

PRIORITIZE CUSTOMERS

FACTORS

PROFIT

LIFESPAN

DISCOUNT RATE (8%)

REFERRAL VALUE

INCENTIVES

NETWORK
EXTENDERS

BUNDLING
PARTNERSHIPS

FAMILY DISCOUNTS

ZERO-SUM GAME

INCREASE COST TO
SWITCH (FAMILY
CONTRACT)

DECREASE COST TO
CONVERT (PAY
BUYOUT)