Automating Enterprise Business Processes using AI

Naghi Prasad
Xu Miao

AI-driven enterprise applications

- Business processes mapped to an AI engine to enable business efficiencies.
- 4 business processes being automated by AI
  - Customer Support
  - Recruiting
  - Content Marketing
  - AdTech
- We will conclude with lessons learned from being very involved in these companies since inception.

But then what is AI? – Lessons Learned

- **AI is a rich source of interesting tools**
  - Lot more than Deep Learning, CNN, Generative Adversarial Networks!!
  - Suite of techniques to evoke intelligence :
    - Categorizers, Regression, NLP, Case-Based reasoning etc.
- **Domain driven rather than technique driven**
  - Let the domain drive the problem solving and which techniques you use from the bag
- **Interesting Data strategies**
- **AI application is like a raisin bread : it is still 90% bread**

Neva

AI-Driven Automation for Service and Support

Why Neva?

Customer service organizations must improve support quality while reducing delivery costs.

Key challenges

- **Fragmented knowledge** from disparate knowledge sources and enterprise systems, and decentralized change management.
- **Inefficient decision-making** due to gap between front and back office, frequent changes, and inability to continuously train human agents.
- **Fractured user experience** due to omni-channel, modern support outside work and inefficient, human-based support at work

Neva
dan
demo
general
github
help_desk
neva-standup-status
nevaengineering
nevapoc
random
servicenow

DIRECT MESSAGES (30)
slackbot
dan (you)
demobot-dev-qs
john
john, mohan
melanie
melanie, serene
mohan
neva_agent
sabateserra
serene
siva_bimarian
xumiao
+ Invite people

@neva_agent
active | Beth Anglin

Search

My account is locked. How do I reset my password?

neva_agent BOT 8:47 AM
I understand you need to reset your password. I found three knowledge articles that may help.
1) Resetting your domain password on Mac
2) Resetting your domain password on Windows
3) Resetting your password over the VPN

← Question

dan 8:48 AM
No, those didn't help. Please create an incident.

← Issue

neva_agent BOT 8:48 AM
Thanks for letting me know. Please wait while I create an incident ...
Done! Please use http://52.42.197.121:3000/#/incidents/45 to refer this issue in the future

> 52.42.197.121
> Neva Incident Management

dan 9:00 AM
I have a visitor in building three. Can you provision WiFi access?

← Request

neva_agent BOT 9:00 AM
Yes, no problem. I need a bit more information first. Can you tell me the MAC address of your visitor's laptop?

dan 9:00 AM
Yeah, no problem. The visitor's MAC address is a4:5e:60:d5:ed:bd.

neva_agent BOT 9:00 AM
Thanks! Just one last question: what time should the temporary access expire?

dan 9:00 AM
4:00 PM today.

neva_agent BOT 9:00 AM
MAC address a4:5e:60:d5:ed:bd now has access to building three WiFi until 4:00 PM today. U
to help?

Message

servicenow™ Service Automation

Search

Welcome: fran fernandez

Logout

Filter

Admin
Asset Management
CMDB
ITIL
Reports
All

Self-Service
Live Feed
Homepage
Service Catalog
Knowledge
Help the Help Desk

My Task Boards
Incidents
Watched Incidents
My Requests
Requested Items
Watched Requested Items

My Profile
My Tags
My Knowledge Articles
Take Survey
My Approvals

Incident

Submit | Resolve Incident

Number	INC0010985
Caller	Danette Fostervold
Location	Paradise Road, Richmond, l
Category	Hardware
Subcategory	CPU
Configuration item	MacBook Air 13"
Impact	3 - Low
Urgency	3 - Low
Priority	4 - Low
Short description	How do I reset my MacBook to the factory settings?
Description	This incident was submitted by Neva via Slack at 10:27 AM on August 6.

Neva suggests

Similar answers
INC03257 | Dave L. | Resolved | 07/23/16 | 83% relevant
INC03723 | Denise P. | In Progress | 07/11/16 | 72% relevant

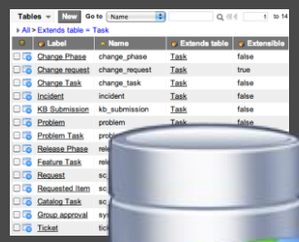
Experts


Knowledge graph

Sources

Complicated Data Environment

Structured



Operational DBs

Datawarehouse

{ APs } Enterprise APIs

Unstructured

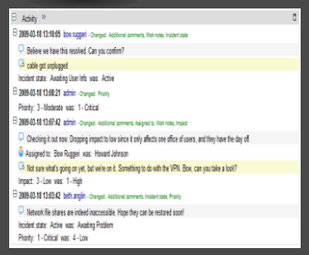
Confluence Knowledge Articles

Forum Posts

Screen shots

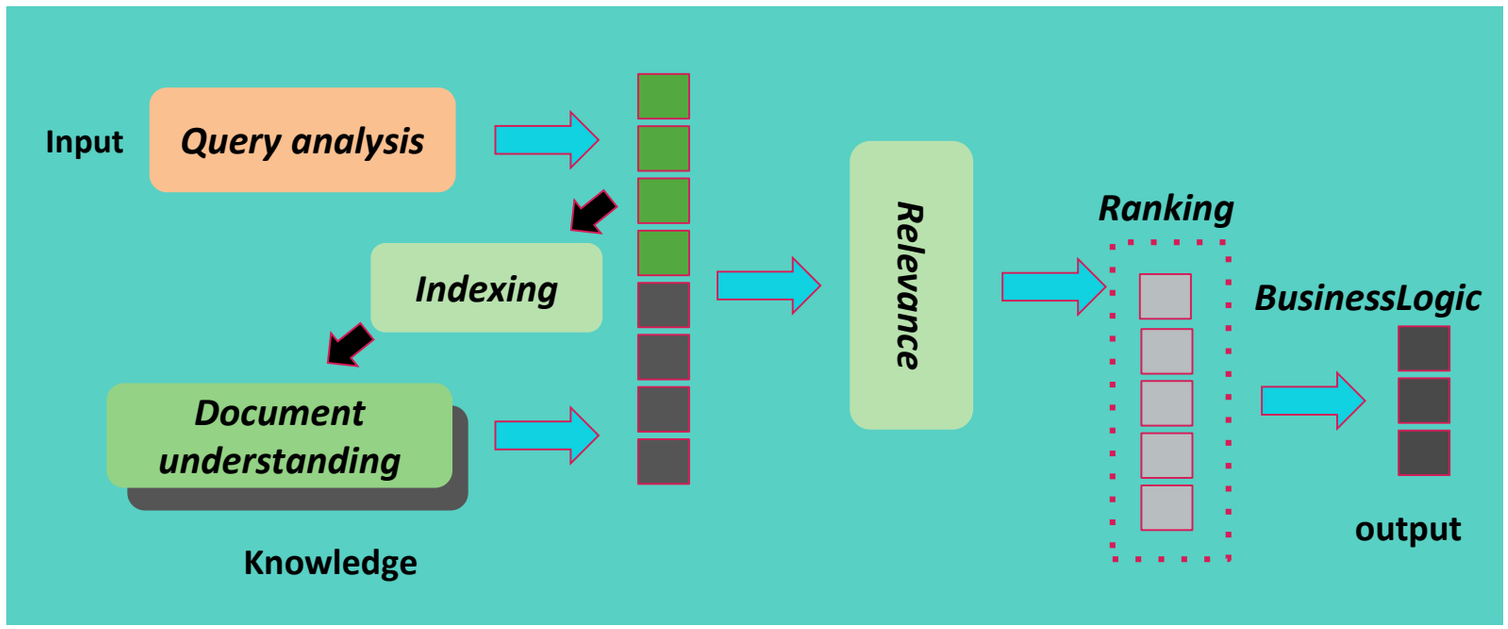
Semi-structured

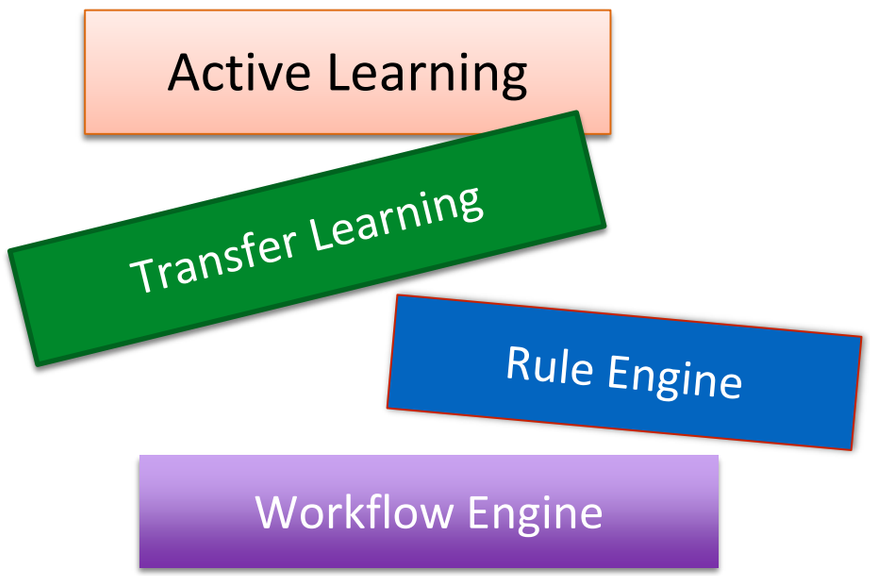
E-mails

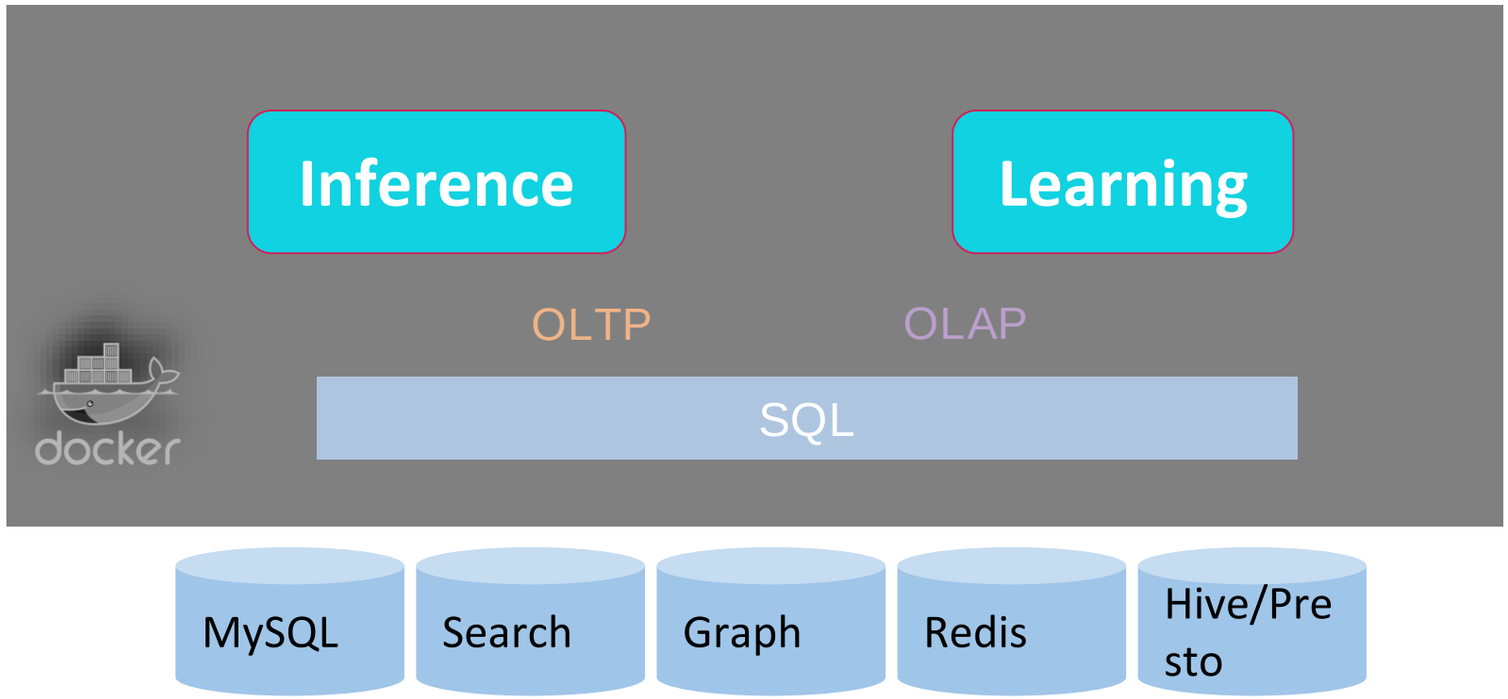


Log/message history

Model Driven Intelligent Data Process

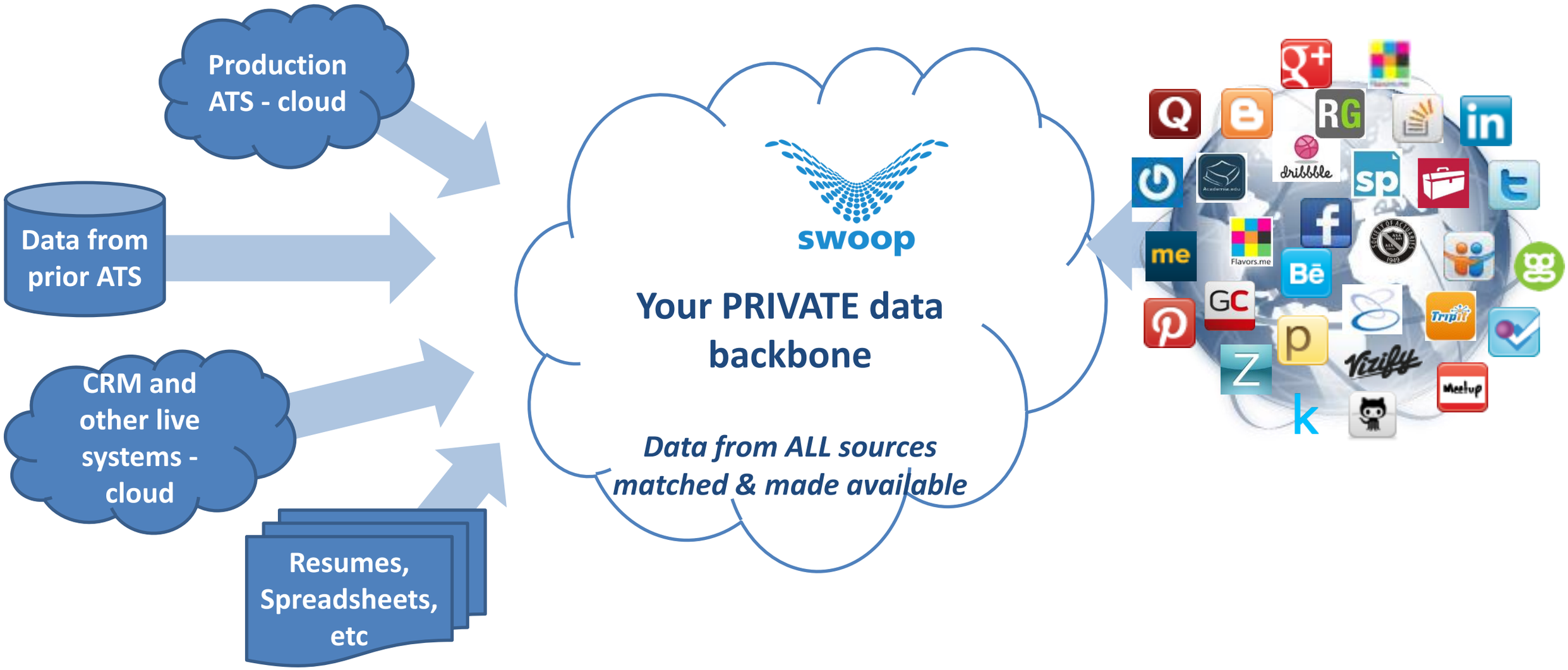






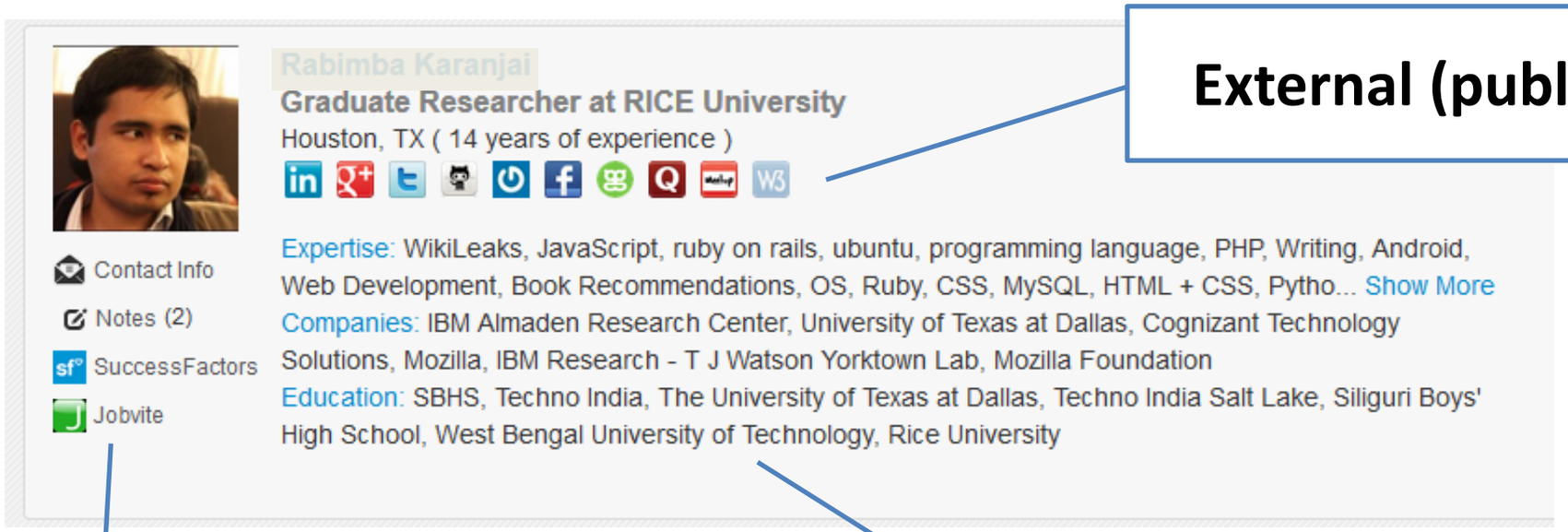
Talent Data Cloud with SwoopTalent

Private Talent Data Cloud



Hundreds of millions of social talent records gathered by Swoop

Candidate Profiles on SwoopTalent

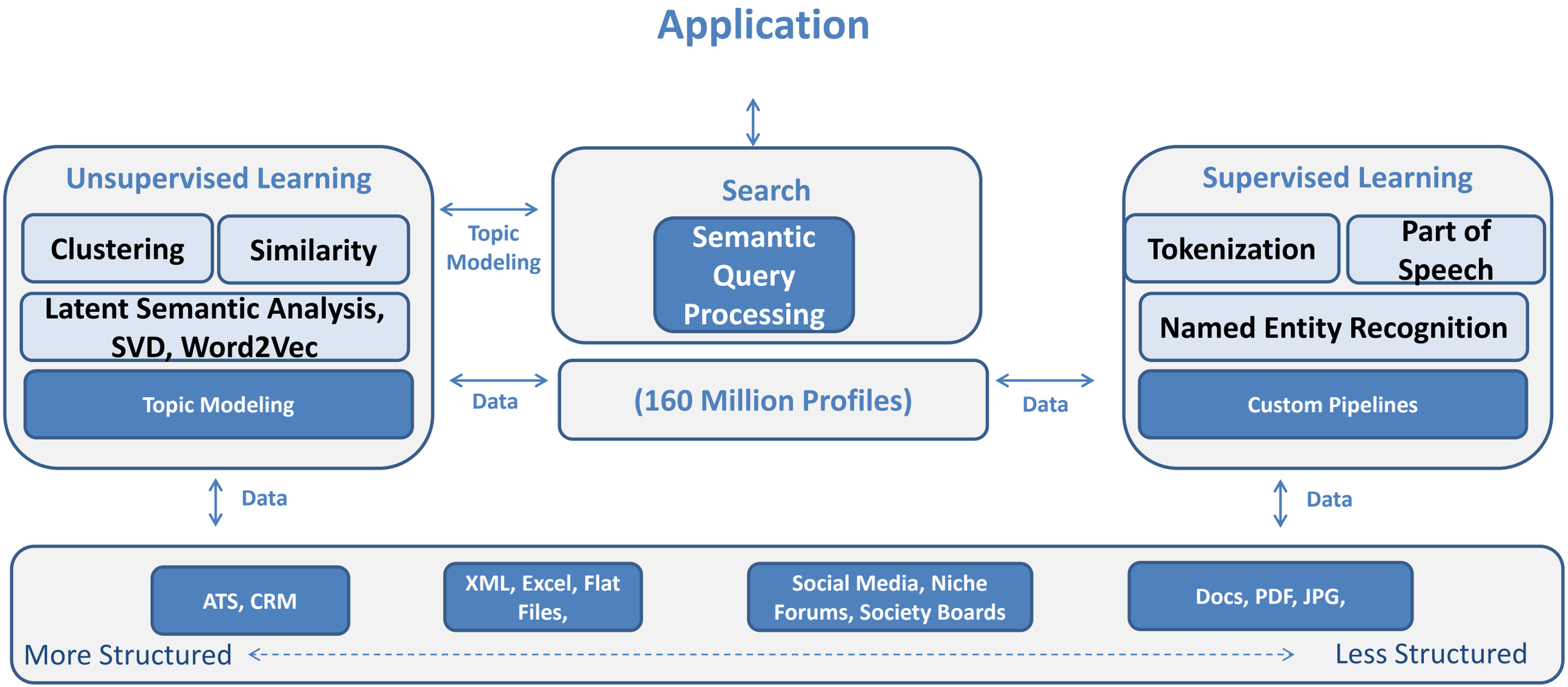


External (public) records

Internal ATS records

Combined data: rich, fresh, searchable, analyzable

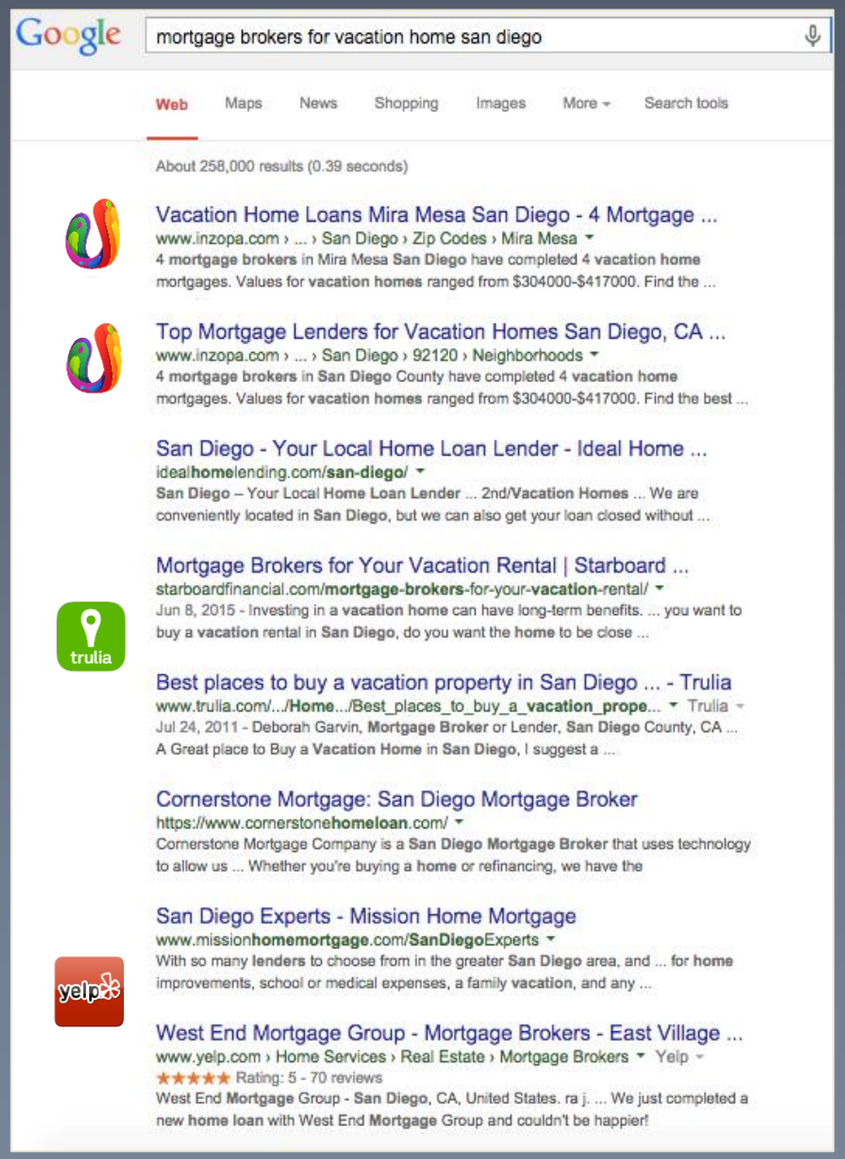
Swoop AI Layer

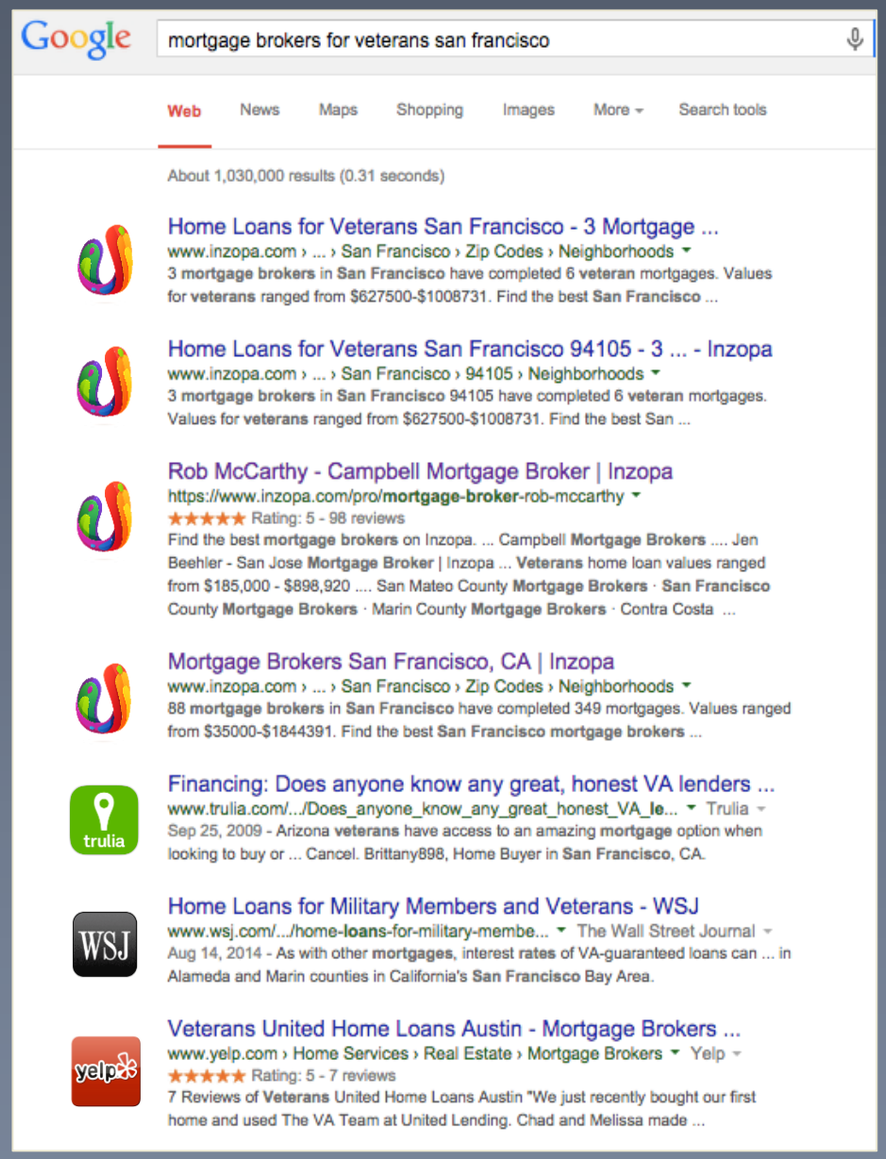


Up IQ

Autonomous Marketing™

Automatically generates statistically relevant marketing content that is highly personalized

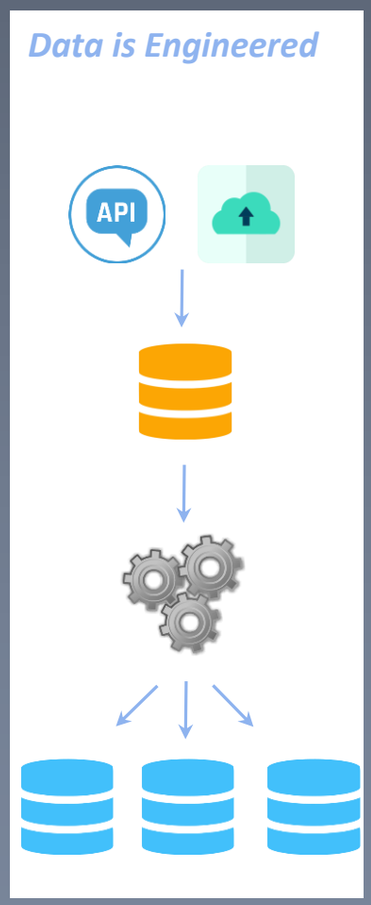


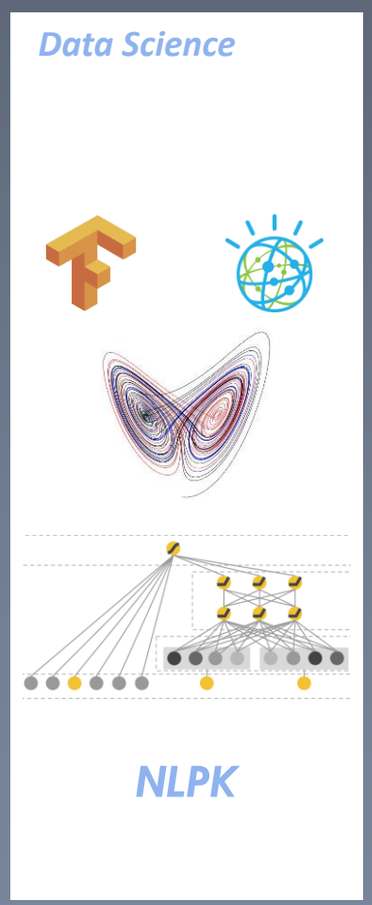


10x better conversion rates
for organic search

Enterprises Journey to Autonomous Marketing

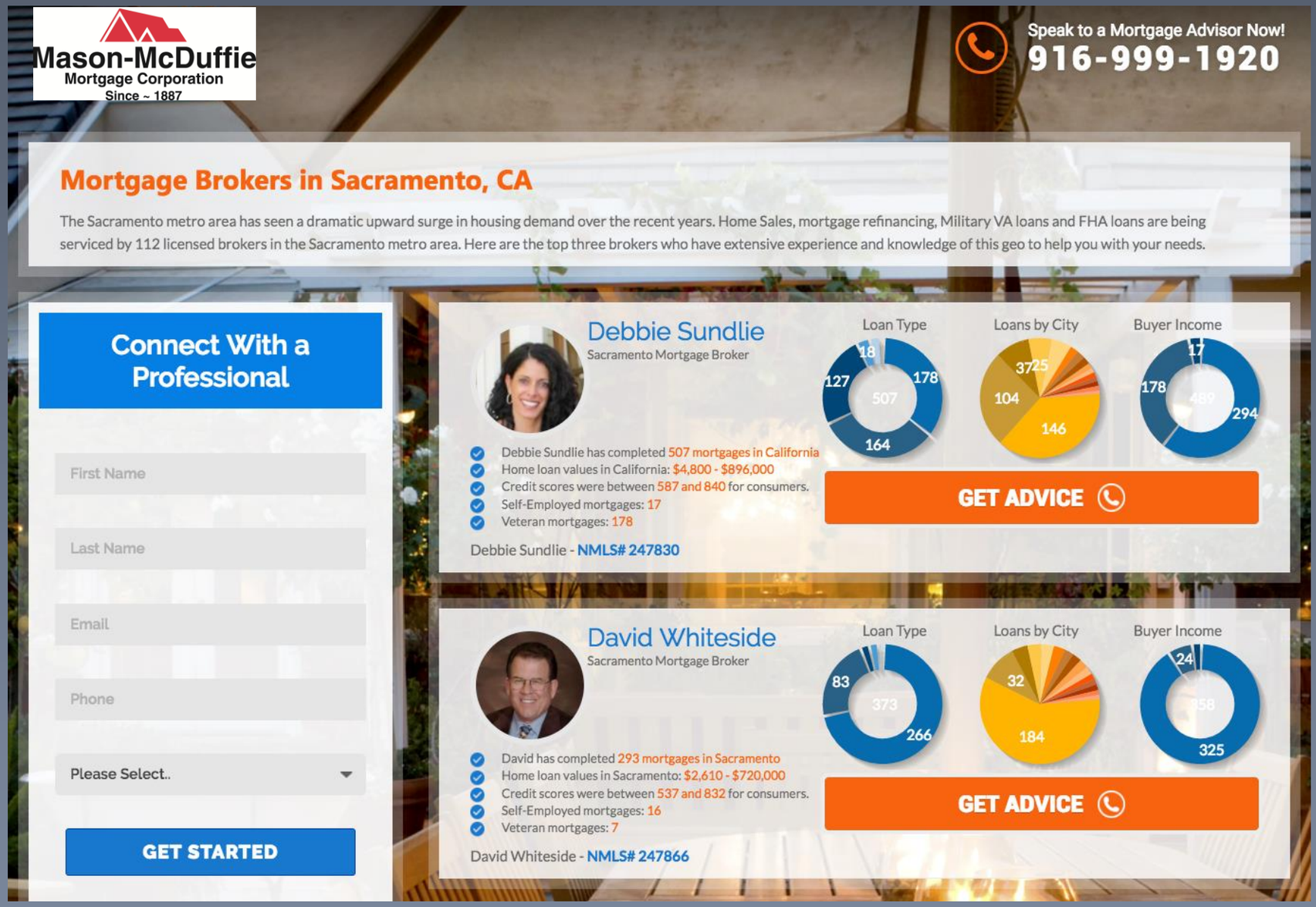
Data Sync → Data Cleansing → Machine Learning → Content Creation





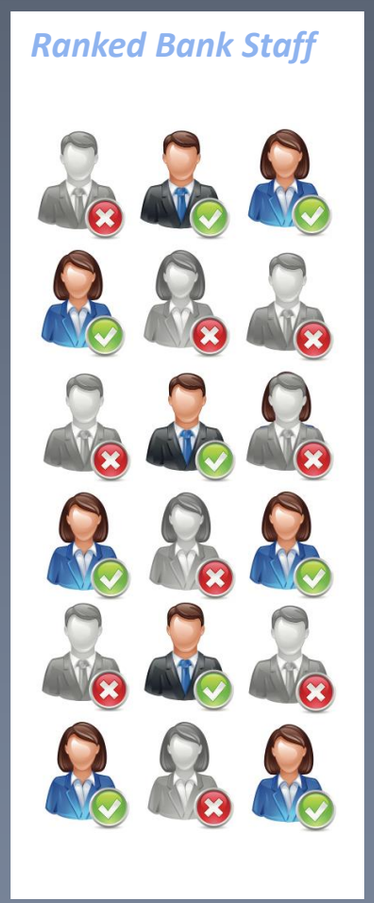
- Markovian Modeling

Up IQ to Power Banks: SEM Campaigns, & Landing Pages



Customers Journey, from Discovery to Acquisition

Content Discovery → Personalized Banks → Relevant Bank Staff



- Information Theoretic Scoring
- Sentiment Analysis

Deep Forest Media

a Rakuten Company

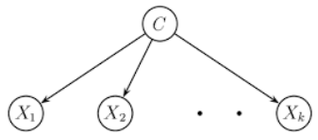
Rakuten

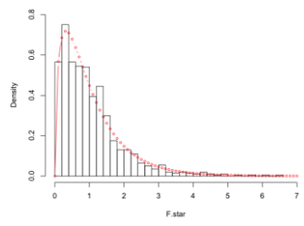
Cross Device Graph

Identify users across smartphones, tablets & desktops

Data Collection (cookie-sync, exchanges, ad impression, native sdk, 3rd party data

Feature engineering (UID, IP, user agent, referral url, login email etc.)



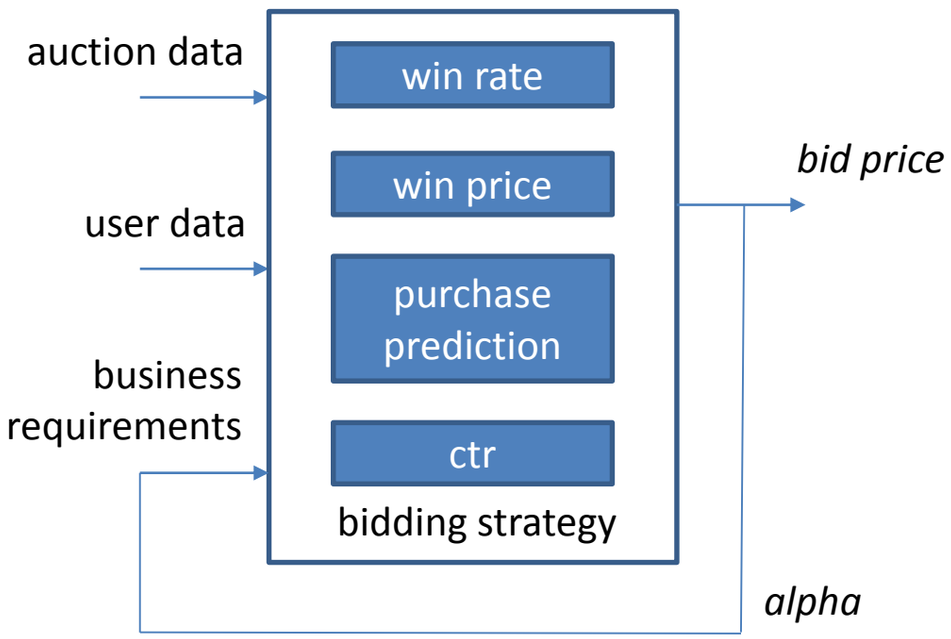


Machine learning models device graph relationships : naive Bayes modeling & heuristics for pruning.

Rakuten

Bid Price Optimization

- **A dynamic pricing algorithm**
  - maximizes the expected value of gain after winning an auction, or $b = argmax_b\{E[gain]\}$
  - adjusts automatically to meet business requirements (ex. CPM margin) using a feedback loop



- **Machine learning models**
  - win rate – binary classification (Random forest)
  - win price – regression
  - purchase prediction – binary classification (Random forest)
  - CTR – binary classification

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Questions?

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