



Job recommendations leveraging Deep Learning
using Analytics Zoo on Apache Spark and BigDL

Job Search



Google

accountant jobs in new york, ny

All Images News Maps Shopping More Settings Tools

About 12,200,000 results (0.86 seconds)

Jobs
Near New York, NY

Accounting & Finance Past 3 days Full-time Management Ad

Media Accountant
AscendHire
New York, NY
via CareerBuilder
7 hours ago \$ 70K–80K a year Full-time

Staff Accountant
WeWork
New York, NY
via Snagajob
1 day ago Part-time

Staff Accountant
Kforce Finance and Accounting
New York, NY
via CareerBuilder
17 days ago \$ 60K–75K a year Full-time

→ 100+ more jobs

Learn more Feedback

indeed

Find Jobs Company Reviews Find Salaries Find Resumes Employers / Post Job

What registered nursing
Where New York, NY

job title, keywords or company city, state, or zip

registered nursing jobs in New York, NY

Upload your resume - Let employers find you

UAS Registered Nurse
Broadway Home Care
New York, NY
\$85,000 - \$100,000 a year
Nursing Clinical Setting: Registered Nurse (RN) (Required). Bachelor of Science in (BSN) (Preferred). UAS Field RN...
Desired Experience: Bilingual, RN, Driver's License
Easily apply
Sponsored save job

Registered Nurse \$3,000 Sign On Bonus!
Dialyze Direct ★★★★★ 6 reviews
New York, NY
BS in Nursing preferred. The Registered Nurse (dialysis) is responsible for coordinating the nursing care, training, and education...
Desired Experience: BLS Certification, RN, Driver's License
Sponsored 1 day ago save job

Registered Nurse
Confidential Healthcare Company
Manhattan, NY 10018 (Clinton area)
\$75,000 a year
Registered Nurse Responsibilities: Performs client nursing assessments using the process and evidence-based strategies...
Desired Experience: Bilingual, BLS Certification, RN, Home Care, ACLS Certification
Easily apply
Sponsored 1 day ago save job

My recent searches
registered nursing - Austin, TX
clear searches

Sort by:
relevance - date

Distance:
within 25 miles

Salary Estimate

\$60,000	(4598)
\$65,000	(4217)
\$70,000	(3470)
\$75,000	(2609)
\$85,000	(1072)

Job Type

Full-time	(5421)
Part-time	(1100)
Contract	(485)
Temporary	(273)
Commission	(24)

Jobs2Careers

Restaurant New York, NY Find Jobs For Employers

Home → Restaurant jobs → Restaurant jobs in New York → Restaurant jobs in New York, NY

Full Time Part Time Hourly All Show Filters

11,128 Restaurant jobs in New York, NY

Relevance Date

Host / Hostess
BLKSQ Pizzeria and Bar
New York, NY
NEW Apply

Restaurant Host
Junior's Restaurants
New York, NY
NEW Apply

Lyft Driver - Get Paid the Same Day with Express Pay
Lyft
Hoboken, NJ
4.0 NEW Apply

Server - Food Server
Sunrise Senior Living
Cresskill, NJ
3.3 NEW Apply 4 days ago

Banquet Server
Noor Associates
Long Island, NY
3.9 NEW Apply 20 hours ago

Restaurant Team Member-Server -
Boston Market
New York, NY
3.0 NEW Apply

Retail Sales Representative
Acosta
Brooklyn, NY
NEW Apply 20 hours ago



Wenjing Zhan
Data Scientist, Talroo



Guoqiong Song
Software Engineer, Intel



Jacob Eisinger
Director of Data, Talroo

- Talroo Overview
- Job Search Challenges
- Resume Search Opportunity
- Analytics Zoo and BigDL Overview
- Resume Search Analytics Zoo Solution
- Lessons Learned

- Talroo Overview
- Job Search Challenges
- Resume Search Opportunity
- Analytics Zoo and BigDL Overview
- Resume Search Analytics Zoo Solution
- Lessons Learned

Where Talent and Recruiting Intersect



- Data-driven job ad network
- Self-funded growth
- Collaborative and social culture
- Austin, TX headquarters





Email



Blogs



SMS/text



Push notifications



Search engine



Niche job sites



Associations

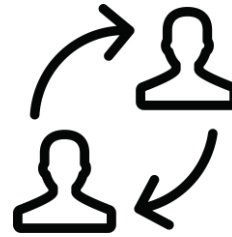


General job boards

Talroo reaches active candidates where they are searching.



Unique candidates



Better matching



Client service

- Talroo turns up what works, and turns down what doesn't, ultimately reducing cost-per-hire.

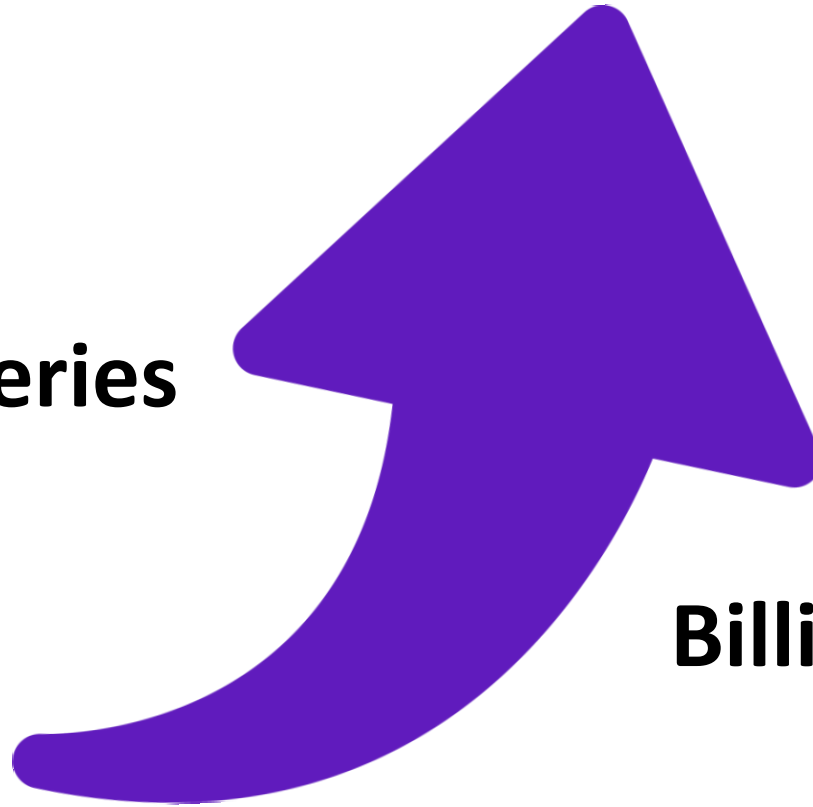
Search



We power search.

**Tens of Millions
of Interactions**

Billions of Queries

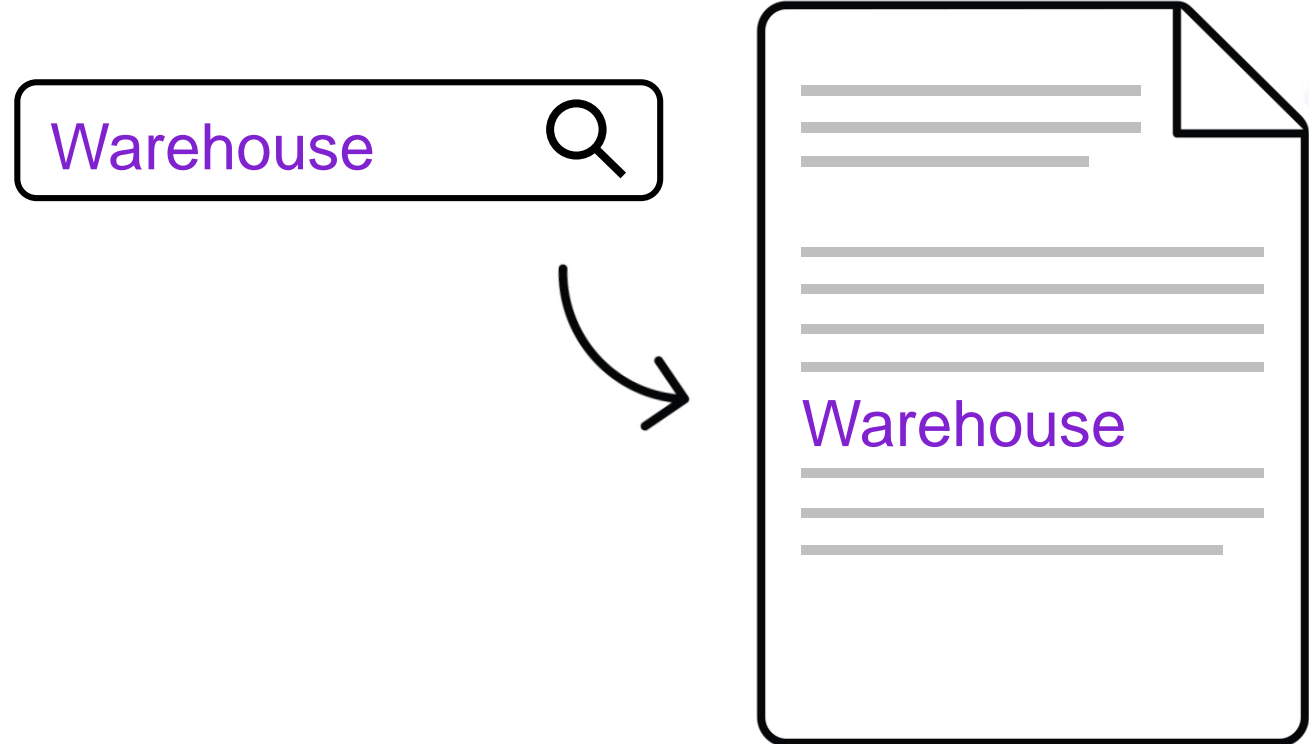


Billions of Jobs Events

**Tens of Billions
Impressions**

- Talroo Overview
- Job Search Challenges
- Resume Search Opportunity
- Analytics Zoo and BigDL Overview
- Resume Search Analytics Zoo Solution
- Lessons Learned

Solution challenges:
stemming, synonyms,
ontologies, sensitivity



Accountant \neq Accounting

Accountant \neq Accounting

~~Accountant~~ $=$ ~~Accounting~~

Stemming Sufferings

Accountant \neq Accounting

~~Accountant~~ $=$ ~~Accounting~~

Accountant $=$ Accounting $=$ Account Representative

Registered
Nurse

=!=

RN

Registered
Nurse \neq RN

Registered
Nurse $=$ RN \rightarrow registered nurse

Registered
Nurse \neq RN

Registered
Nurse $=$ RN \rightarrow registered nurse

■ ■ ■

Dishwasher

=!=

Back of House

Dishwasher

\neq

Back of House

Dishwasher



Restaurant

$=$

Back of House



Restaurant

Dishwasher

=!=

Back of House

Dishwasher



Restaurant

=

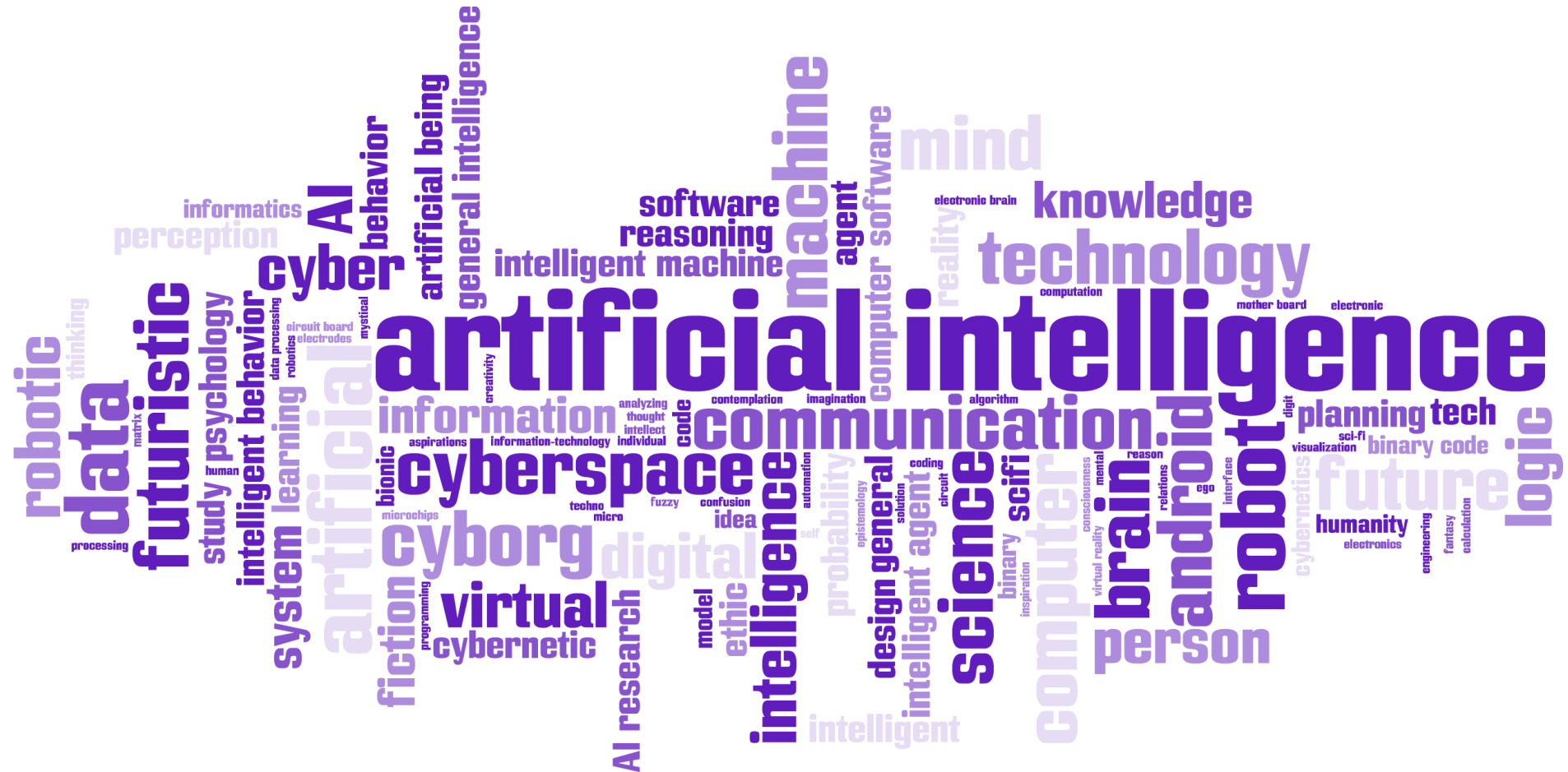
Back of House



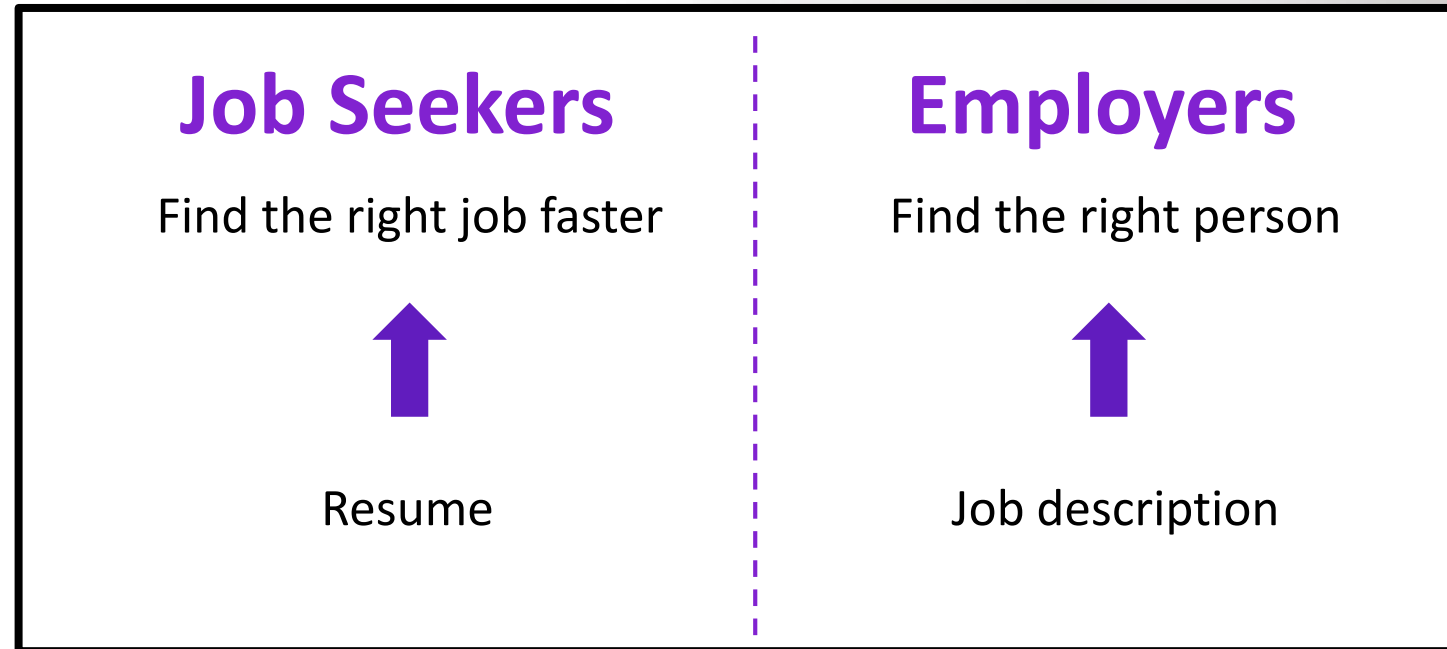
Restaurant

...

Specificity Suffering



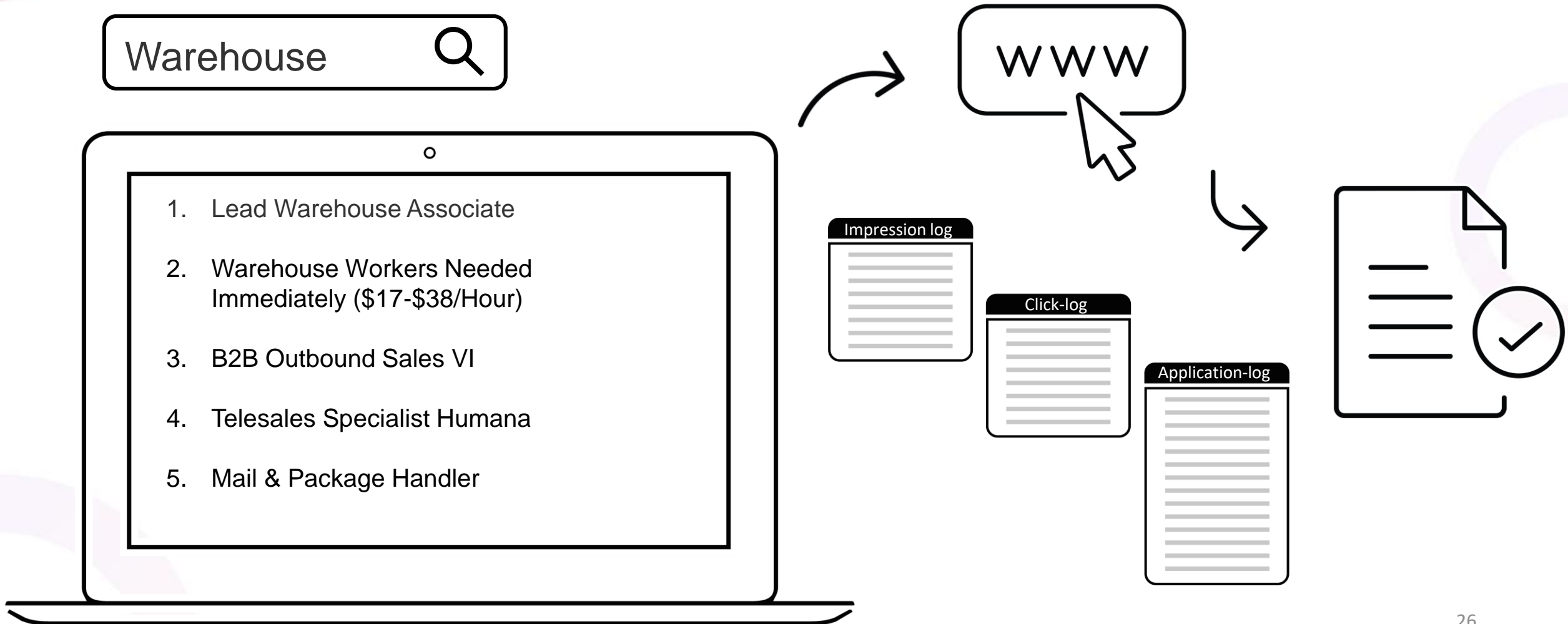
Personalize Results Value



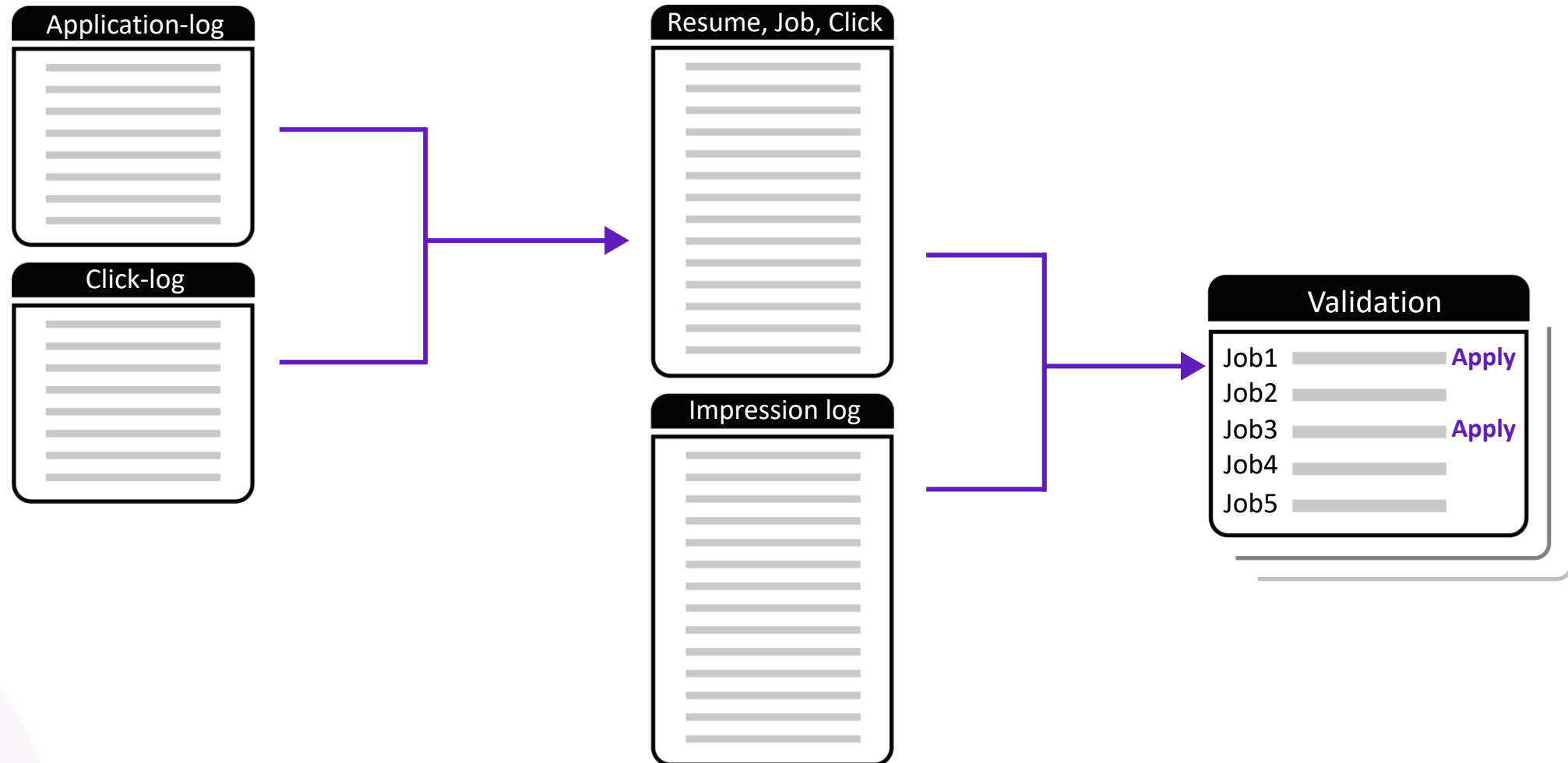
- Talroo Overview
- Job Search Challenges
- **Resume Search Opportunity**
- Analytics Zoo and BigDL Overview
- Resume Search Analytics Zoo Solution
- Lessons Learned

- **What information** is logged ?
- **What do we do** with the logged information ?
- **What did we find** from logged information ?
- **How** to further tackle the findings ?

What Information Do We Log



Replaying the Job Application Process



Real World Example

Warehouse



o

1. Lead Warehouse Associate
2. Warehouse Workers Needed Immediately (\$17-\$38/Hour)
3. B2B Outbound Sales VI
4. Telesales Specialist Humana
5. Mail & Package Handler

expect

1

2

3

4

5

Real World Example

Warehouse



o

1. Lead Warehouse Associate
2. Warehouse Workers Needed Immediately (\$17-\$38/Hour)
3. B2B Outbound Sales VI
4. Telesales Specialist Humana
5. Mail & Package Handler

expect

reality

1

1

2

2

3

3

4

4

5

5

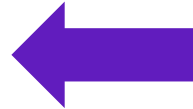
Real World Example



Bilingual International
Sales Executive

09/2007 - 09/2017
Store Manager

03/2001 - 08/2007
International Sales
Executive



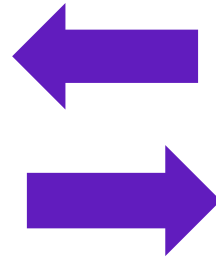
1. Lead Warehouse Associate
2. Warehouse Workers Needed Immediately (\$17-\$38/Hour)
3. B2B Outbound Sales VI
4. Telesales Specialist Humana
5. Mail & Package Handler

Real World Example

Bilingual International
Sales Executive

09/2007 - 09/2017
Store Manager

03/2001 - 08/2007
International Sales
Executive



1. Lead Warehouse Associate
2. Warehouse Workers Needed Immediately (\$17-\$38/Hour)
3. B2B Outbound Sales VI
4. Telesales Specialist Humana
5. Mail & Package Handler

Investigation Of The Findings

-- First Attempt

Bilingual International
Sales Executive

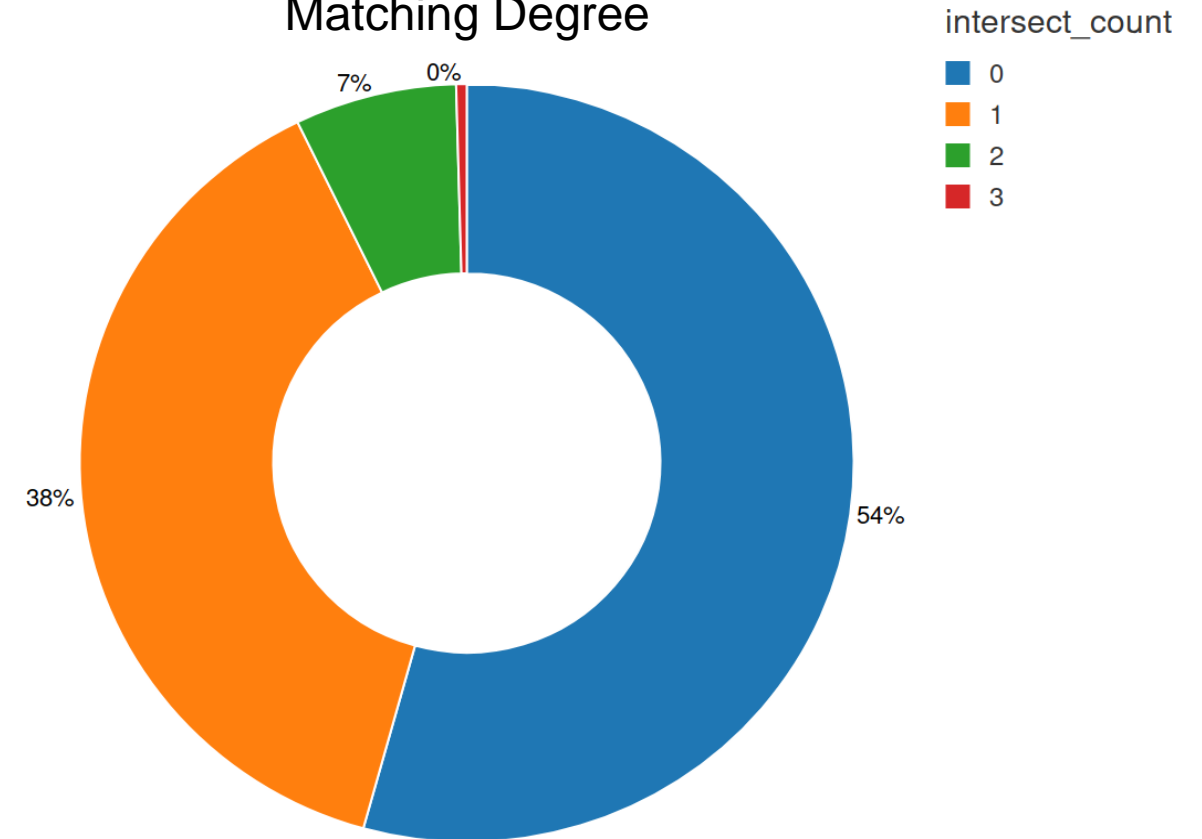
09/2007 - 09/2017
Store Manager

03/2001 - 08/2007
International Sales
Executive

3. B2B Outbound
Sales VI

Industry

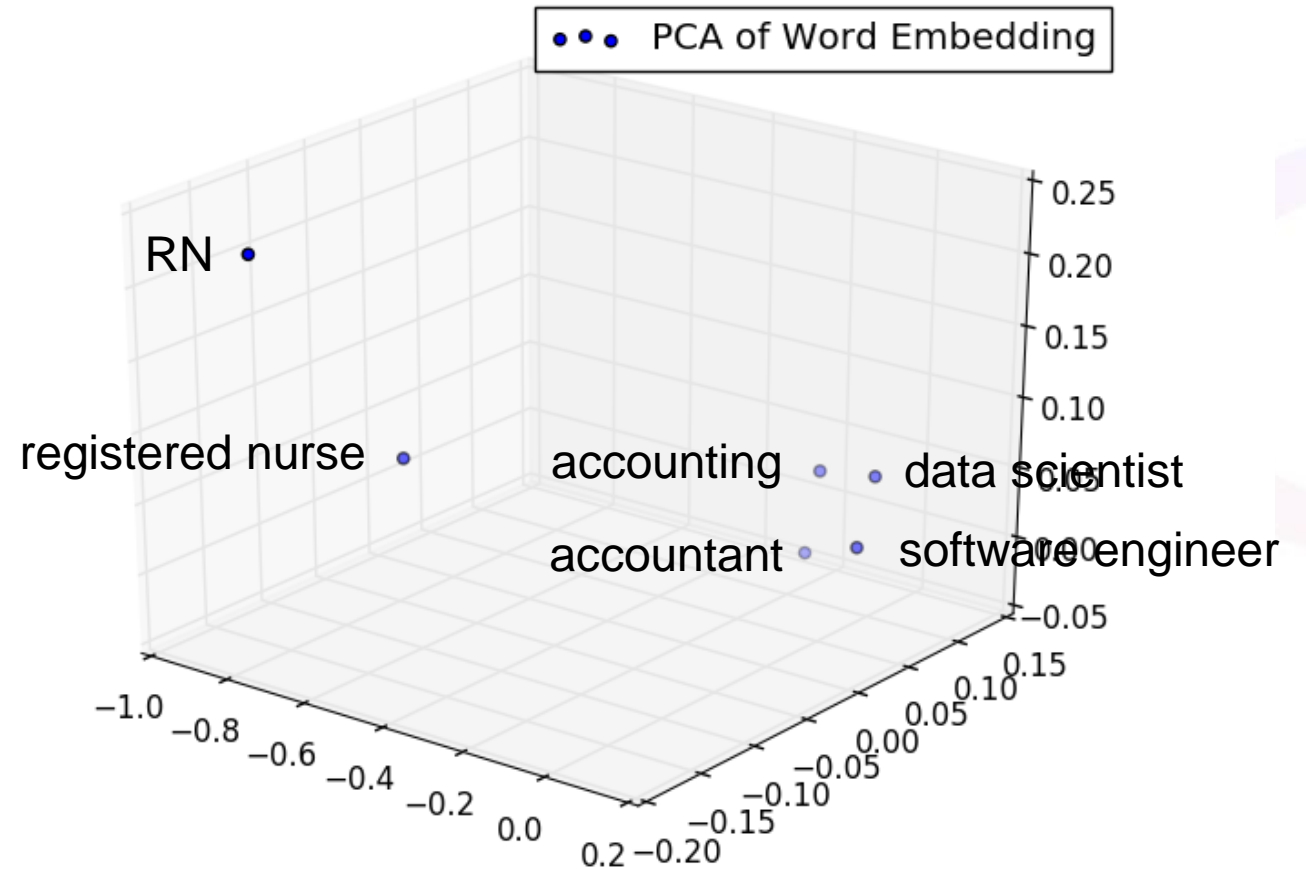
Matching Degree



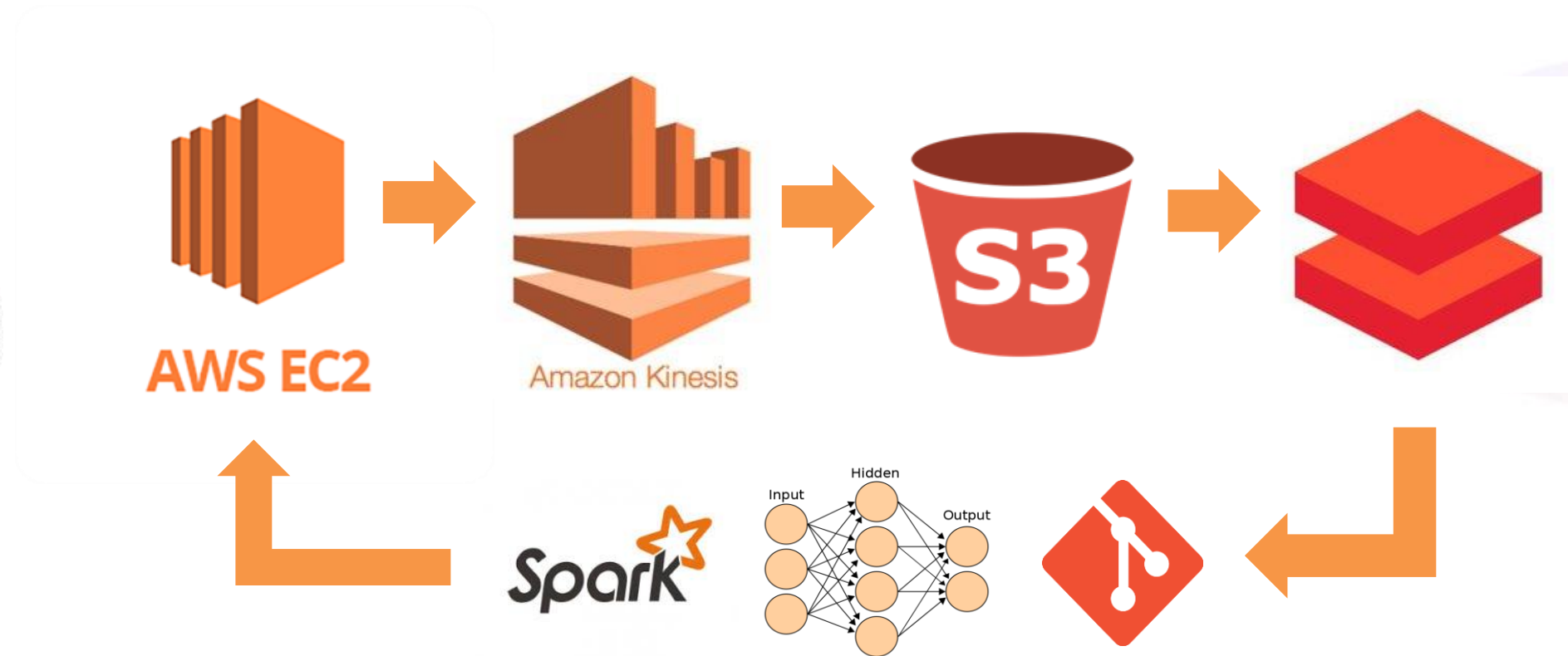
Investigation Of The Findings

-- Reframe The Solution

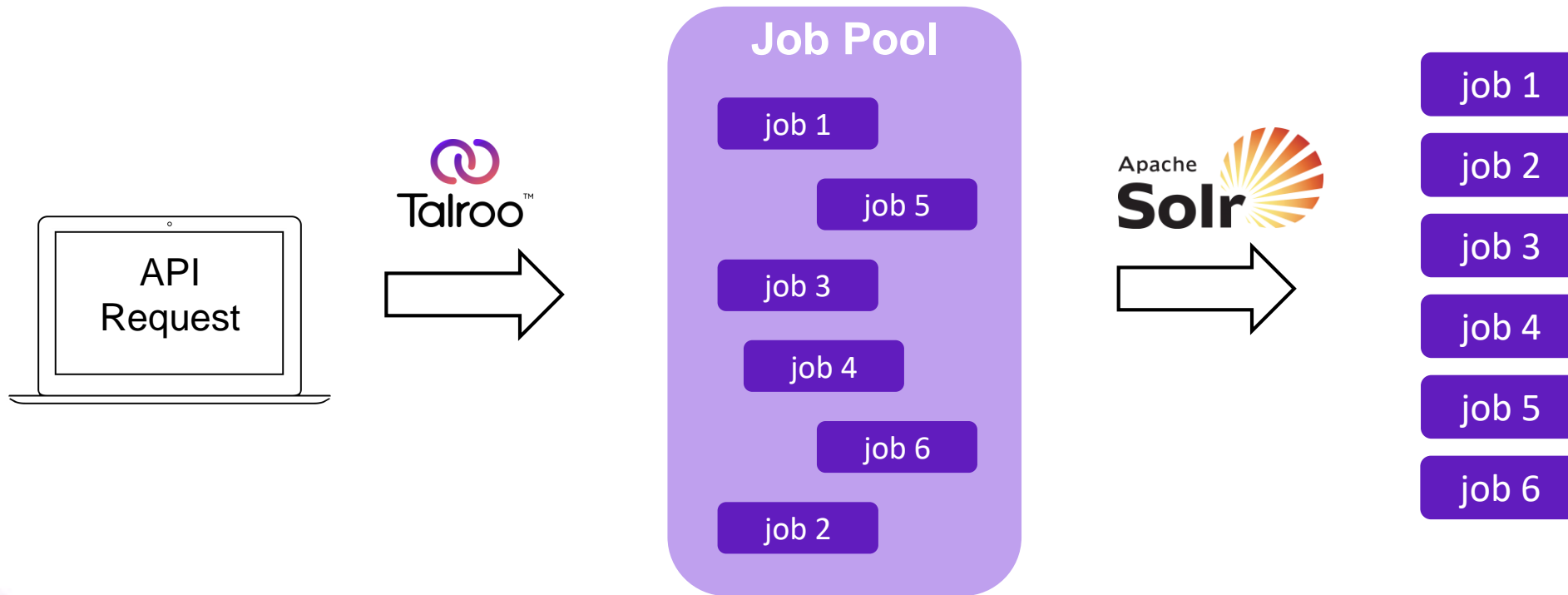
- Handle different terminology
- Identify and respect multiple industries
- Recognize other topics



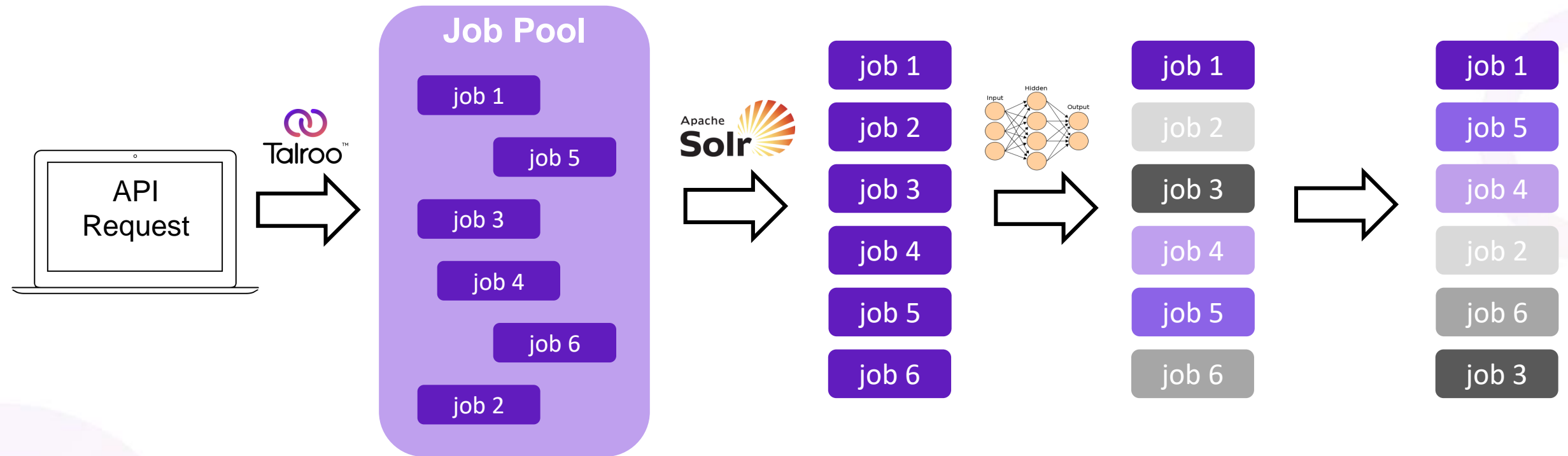
Ideal Resume Search Requirements



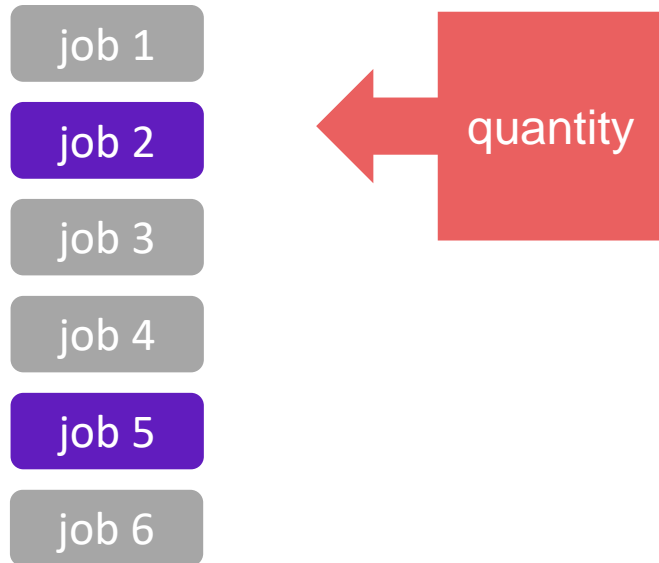
Scoring Before



Scoring After - Reranker Solution



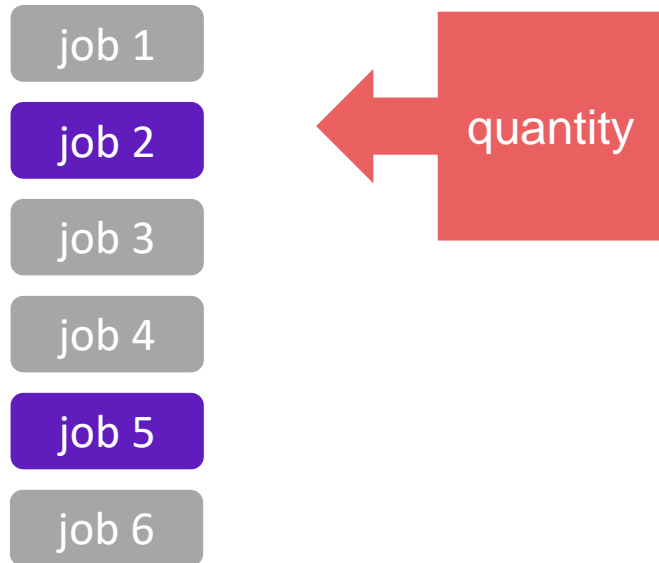
Evaluation Metric – Gold Standard



Online

$$\text{CTR} = \frac{\text{clicks}}{\text{impressions}}$$

Evaluation Metric - Quantity



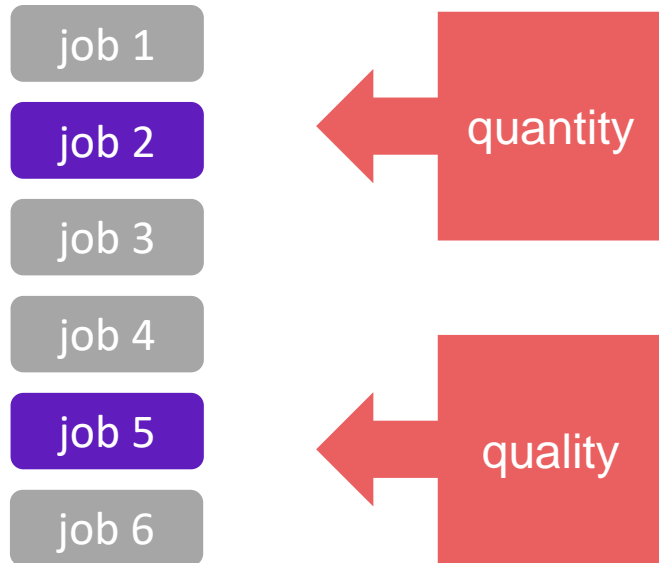
Online

$$\text{CTR} = \frac{\text{clicks}}{\text{impressions}}$$

Offline

$$\text{Precision} = \frac{\text{tp}}{\text{tp} + \text{fp}}$$

Evaluation Metric - Quality



Online

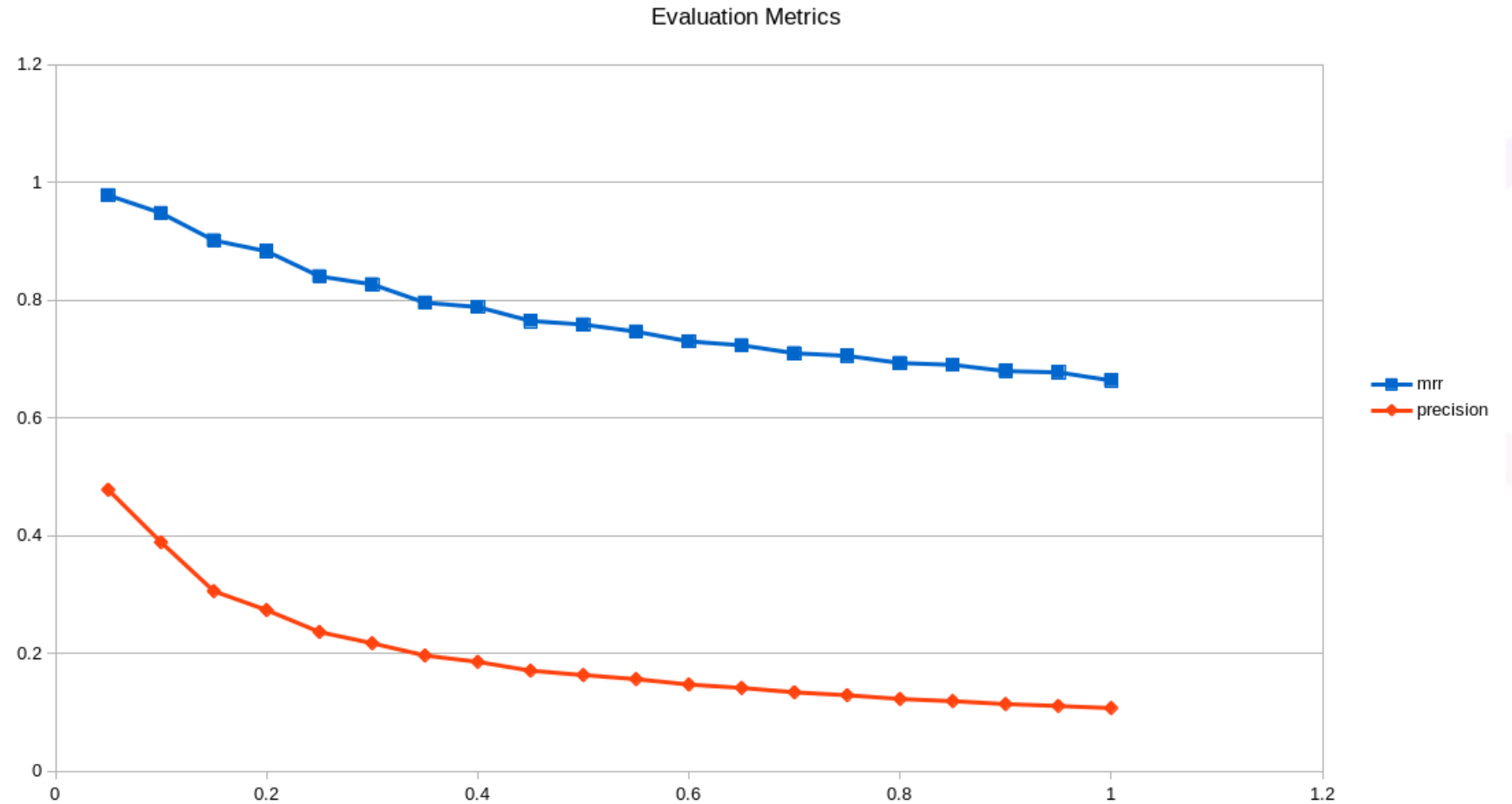
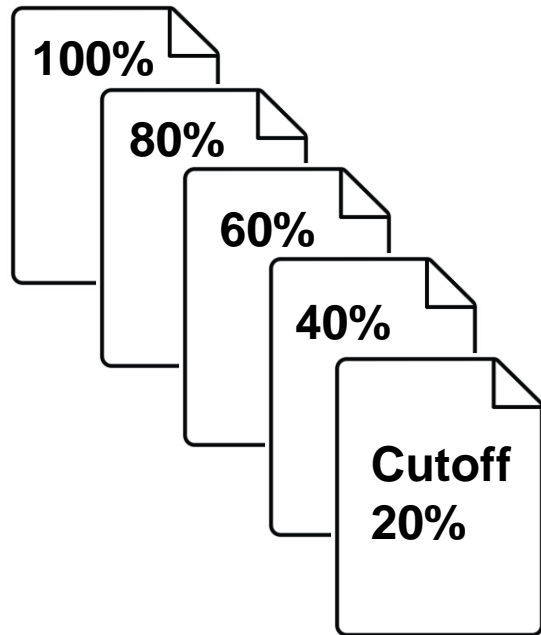
$$\text{CTR} = \frac{\text{clicks}}{\text{impressions}}$$

Offline

$$\text{Precision} = \frac{\text{tp}}{\text{tp} + \text{fp}}$$

$$\text{MRR} = \frac{1}{Q} \sum_{i=1}^Q \frac{1}{\text{rank}_i}$$

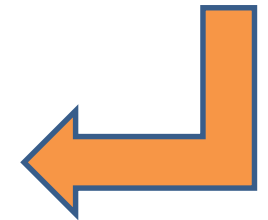
Evaluation Metric - Cutoffs



Resume Search Solution

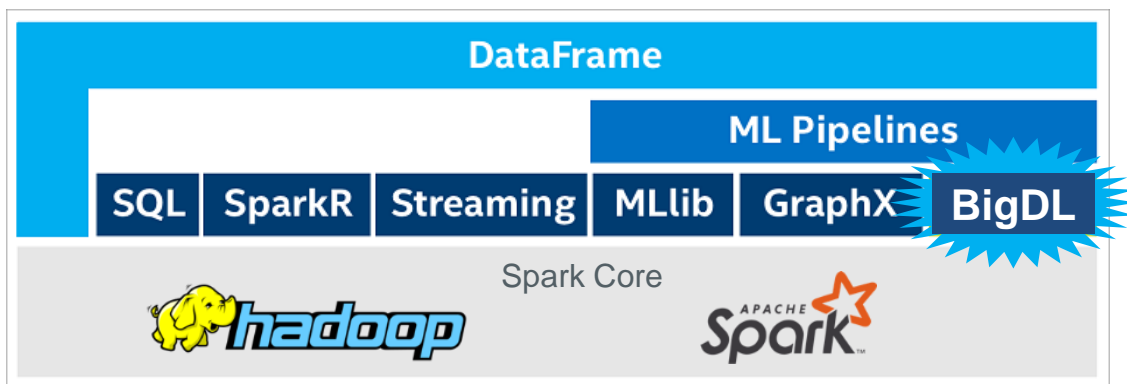


BigDL



- Talroo Overview
- Job Search Challenges
- Resume Search Opportunity
- **Analytics Zoo and BigDL Overview**
- Resume Search Analytics Zoo Solution
- Lessons Learned

High Performance Deep Learning for **Apache Spark*** on **CPU Infrastructure**



BigDL is an **open-source** distributed deep learning library for Apache Spark* that can run directly on top of existing Spark or Apache Hadoop* clusters

Ideal for DL Models TRAINING and INFERENCE

Designed and Optimized for Intel® Xeon®

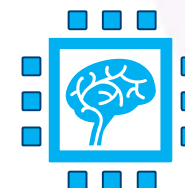
No need to deploy costly accelerators, duplicate data, or suffer through scaling headaches!



Feature Parity & Model Exchange
with TensorFlow*, Caffe*,
Keras, Torch*



Lower TCO and improved ease of use
with existing
infrastructure



Deep Learning on Big Data Platform, Enabling Efficient Scale-Out

Powered by Intel® MKL and multi-threaded programming

Build and Productionize **Deep Learning Apps** for **Big Data** at Scale

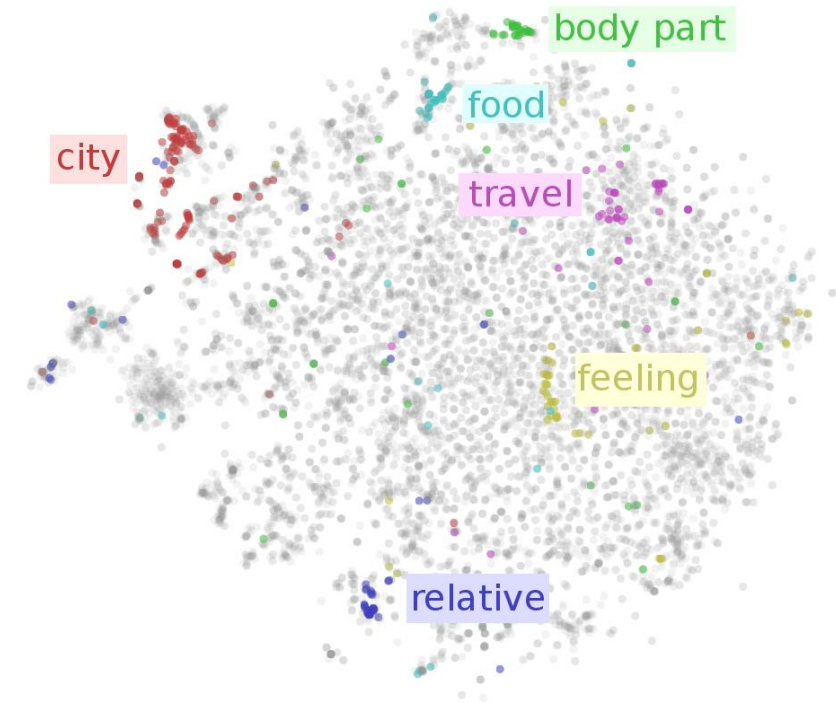
Reference Use Cases	<ul style="list-style-type: none">• Anomaly detection• Sentiment analysis• Fraud detection• Chatbot, sequence prediction, etc.
Built-In Deep Learning Models	<ul style="list-style-type: none">• Image classification• Object detection• Text classification• Recommendations• Sequence-to-sequence, GAN, etc.
Feature Engineering	Feature transformations for <ul style="list-style-type: none">• Image, text, 3D imaging, time series, speech, etc.
High-Level Pipeline APIs	<ul style="list-style-type: none">• Native deep learning support in Spark DataFrames and ML Pipelines• Autograd, Keras and transfer learning APIs for model definition• Support for model serving/inference pipelines
Backends	Spark, BigDL, TensorFlow, etc.

- Talroo Overview
- Job Search Challenges
- Resume Search Opportunity
- Analytics Zoo and BigDL Overview
- **Resume Search Analytics Zoo Solution**
- Lessons Learned

- Retrieve document vectors (resume and job) using Glove vectors
- Analytics Zoo recommender model
- End-to-End flow(offline training)
- Evaluation Results

Word Embeddings and GloVe Vectors

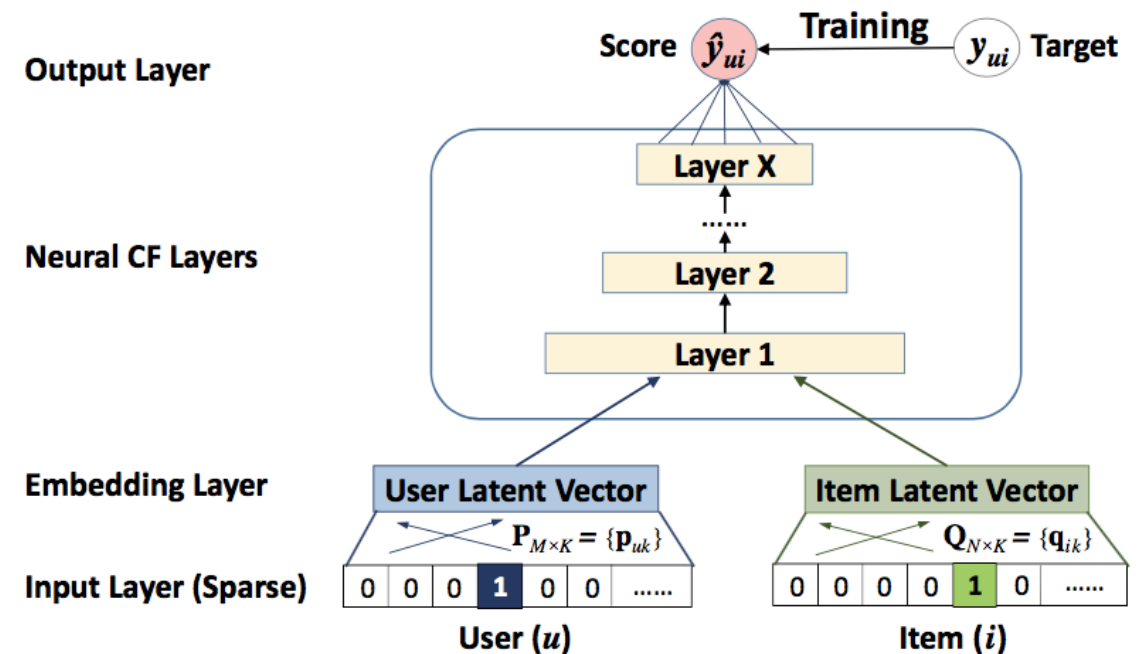
- Words or phrases from the vocabulary are mapped to **vectors of real numbers**.
- **Global log-bilinear regression model for the unsupervised** learning algorithm.
- Training is performed on aggregated global **word-word co-occurrence statistics** from a Wikipedia.
- Vector representations showcase meaningful **linear substructures** of the word vector space.



Analytics Zoo Recommender Model

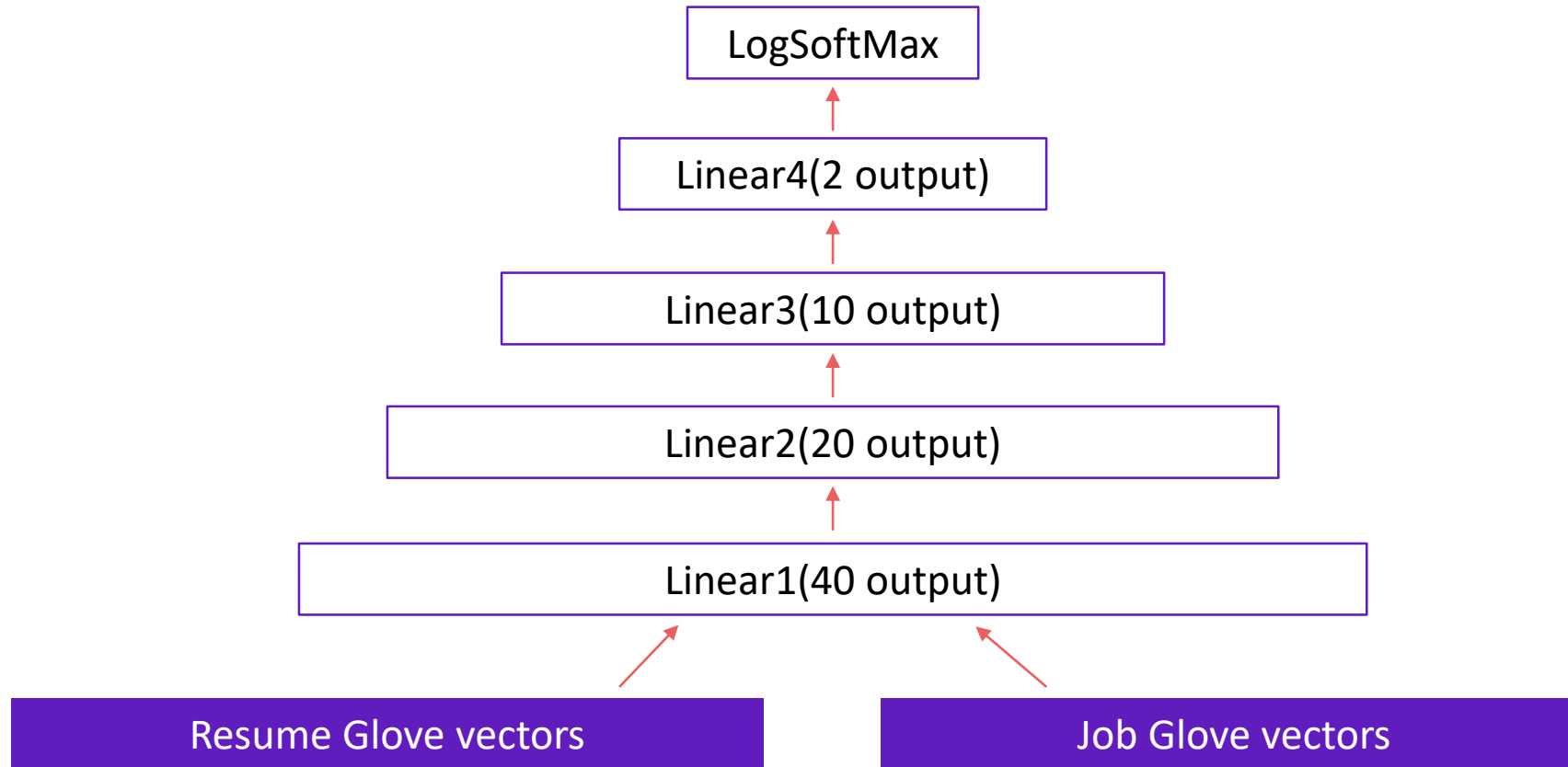


- Neural collaborative filtering, Wide and Deep
- Answer the question using classification methodologies
- Implicit feedback and explicit feedback
- APIs
 - recommendForUser
 - recommendForItem
 - predictUserItemPair

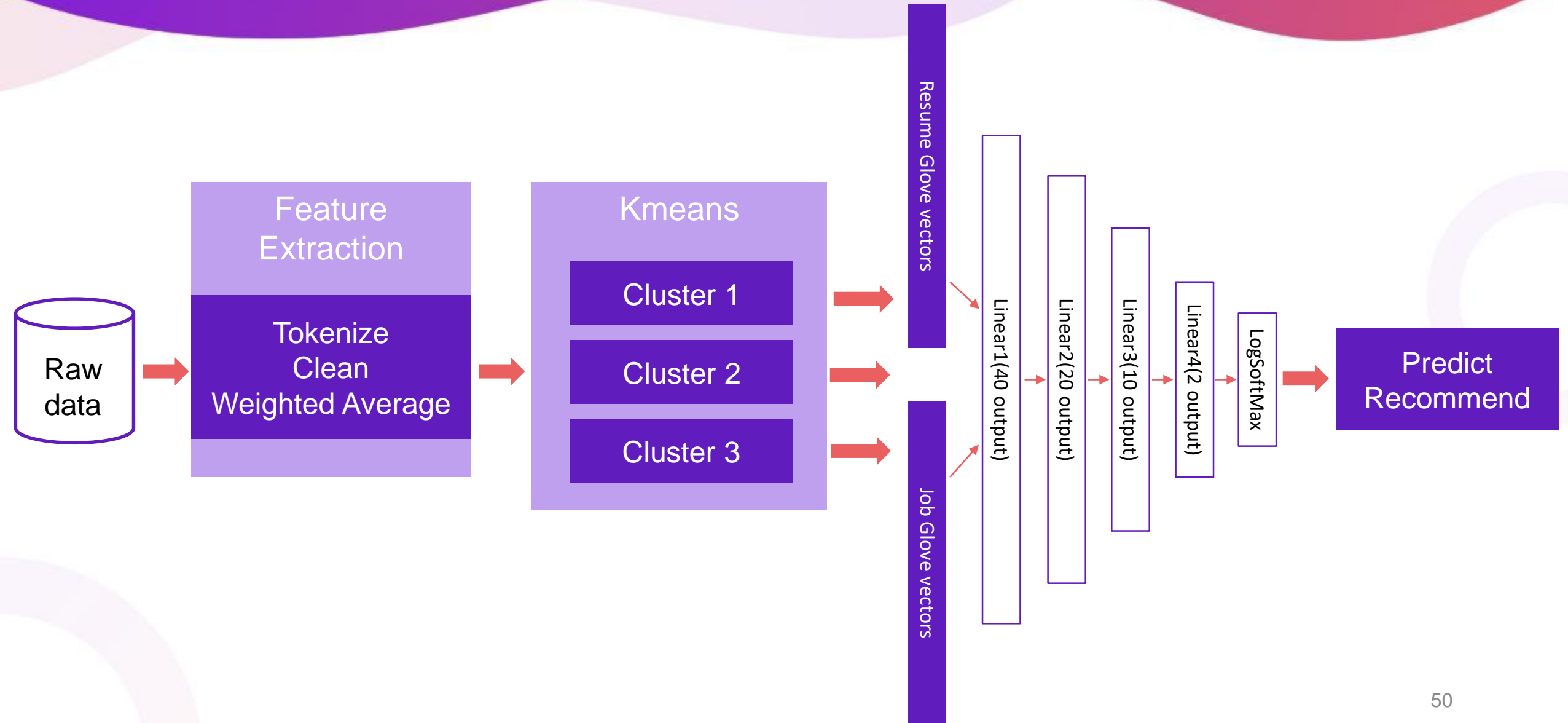


He, 2015

Recommender model

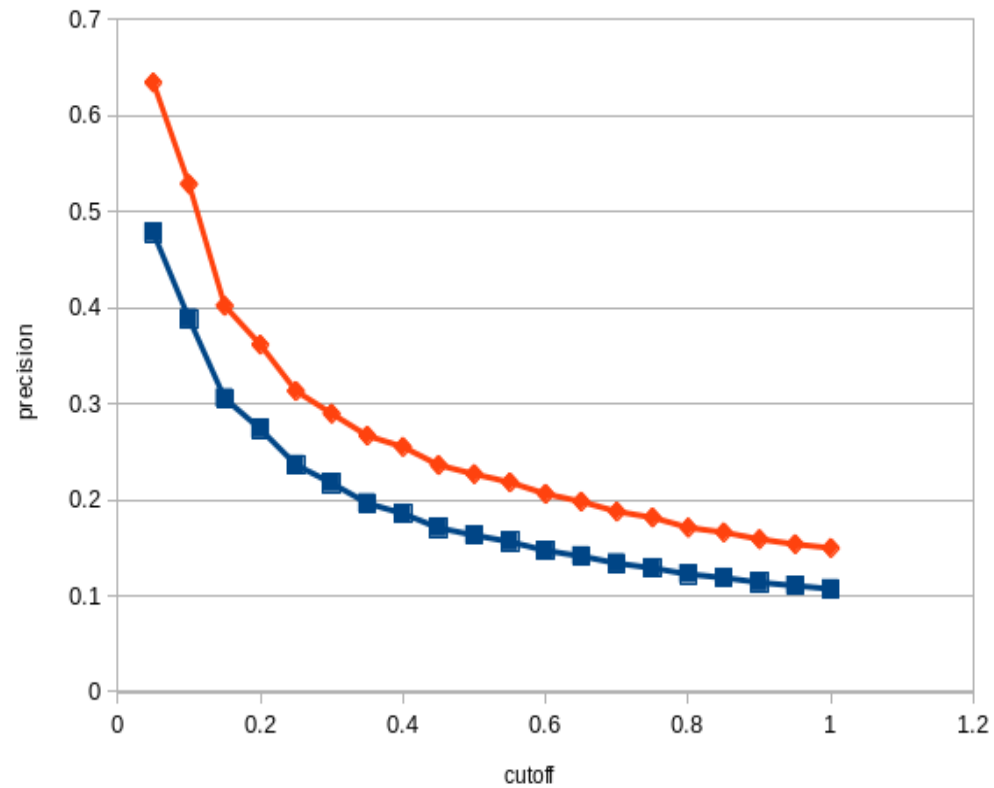


End to End Flow

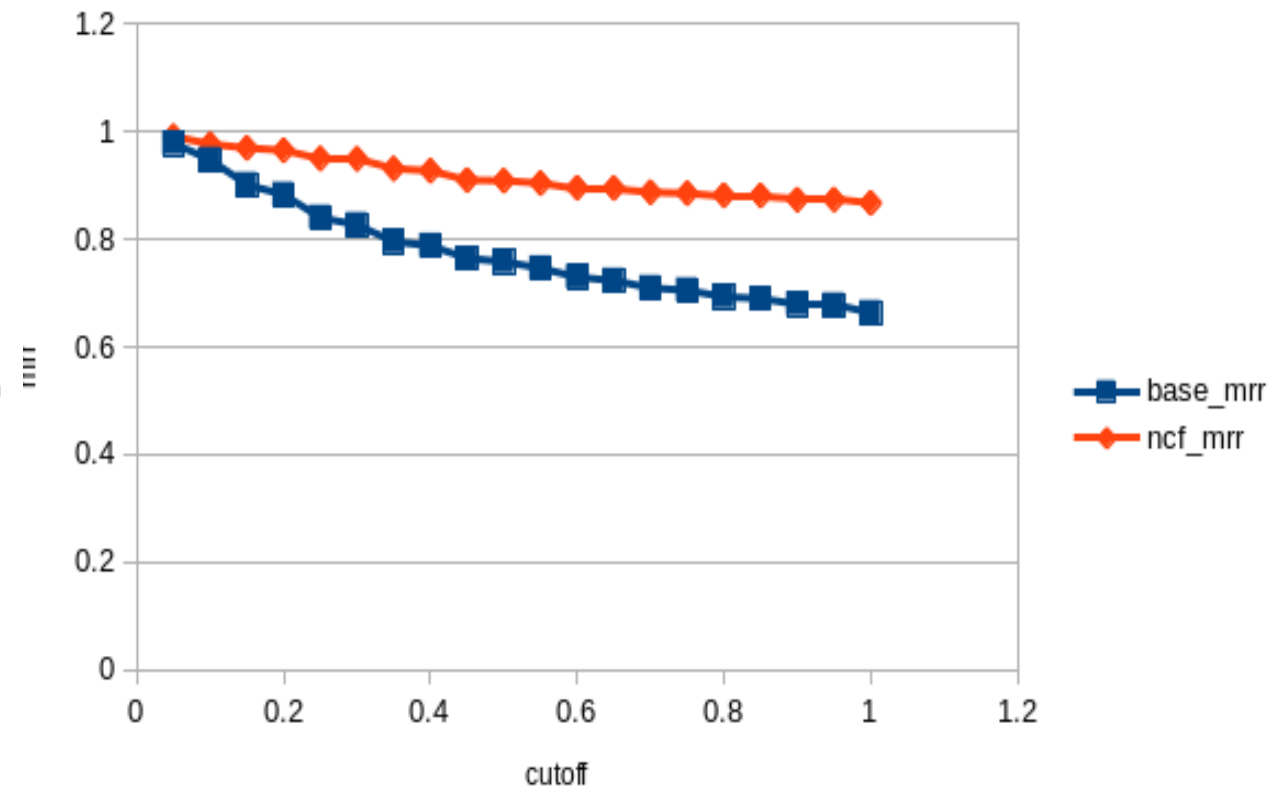


Evaluation Results

Precision



MRR



- Talroo Overview
- Job Search Challenges
- Resume Search Opportunity
- Analytics Zoo and BigDL Overview
- Resume Search Analytics Zoo Solution
- **Lessons Learned**

- Analytics Zoo/BigDL integrates well into existing AWS Databricks Spark ETL and machine learning platform
- Analytics Zoo/BigDL scales with our data and business
- Jobs and resumes can be effectively modeled and processed through embeddings
- Ensembling multiple models and glove embedding feature embedding proved to be very effective for rich content
- More information available at <https://analytics-zoo.github.io/>

- Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Learn more at intel.com, or from the OEM or retailer.
- No computer system can be absolutely secure.
- Tests document performance of components on a particular test, in specific systems. Differences in hardware, software, or configuration will affect actual performance. Consult other sources of information to evaluate performance as you consider your purchase. For more complete information about performance and benchmark results, visit <http://www.intel.com/performance>.

Questions?



Wenjing Zhan
Data Scientist, Talroo
wenjing@talroo.com



Guoqiong Song
Software Engineer, Intel
guoqiong.song@intel.com



Jacob Eisinger
Director of Data, Talroo
jacob@talroo.com

End to End Flow

