Sparkling Emoticana

최호선, 김현우, 김태오, 오상신, 임지훈


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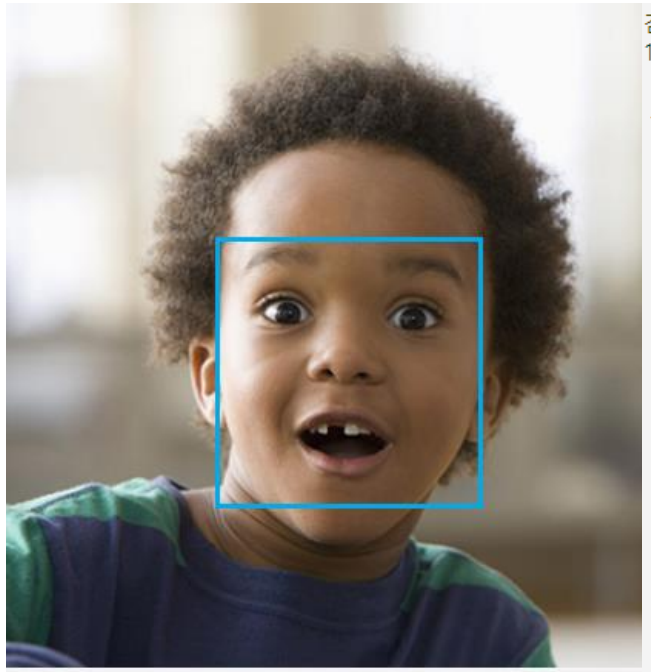
Spark


1.프로젝트 소개
Spark

프로젝트 소개

주제 선정 배경

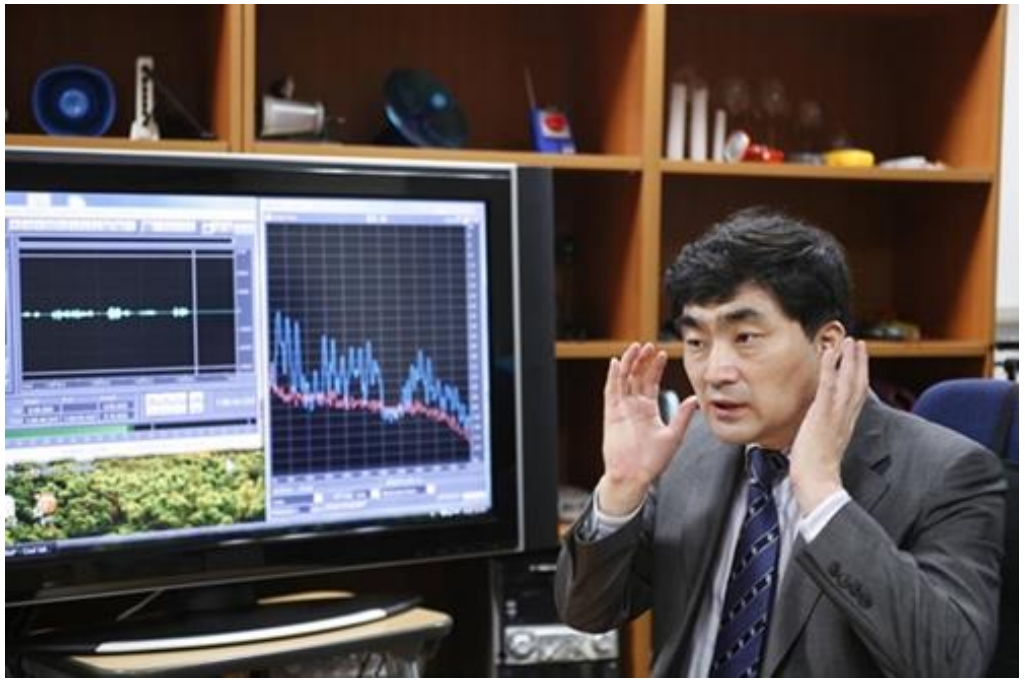


감지 결과:
1개 얼굴이 감지됨

JSON:


```
[
 {
   "faceRectangle": {
     "top": 141,
     "left": 130,
     "width": 162,
     "height": 162
   },
   "scores": {
     "anger": 9.29041E-06,
     "contempt": 0.000118981574,
     "disgust": 3.15619363E-05,
     "fear": 0.000589638,
     "happiness": 0.06630674,
     "neutral": 0.00555004273,
     "sadness": 7.44669524E-06,
     "surprise": 0.9273863
   }
 }
]
```


Microsoft Azure Emotion API



소리박사 배명진 교수

프로젝트 소개

주제 선정 배경

Spark Deep Learning으로 Audio-Emotion-Classification

Sparkling Emoticana

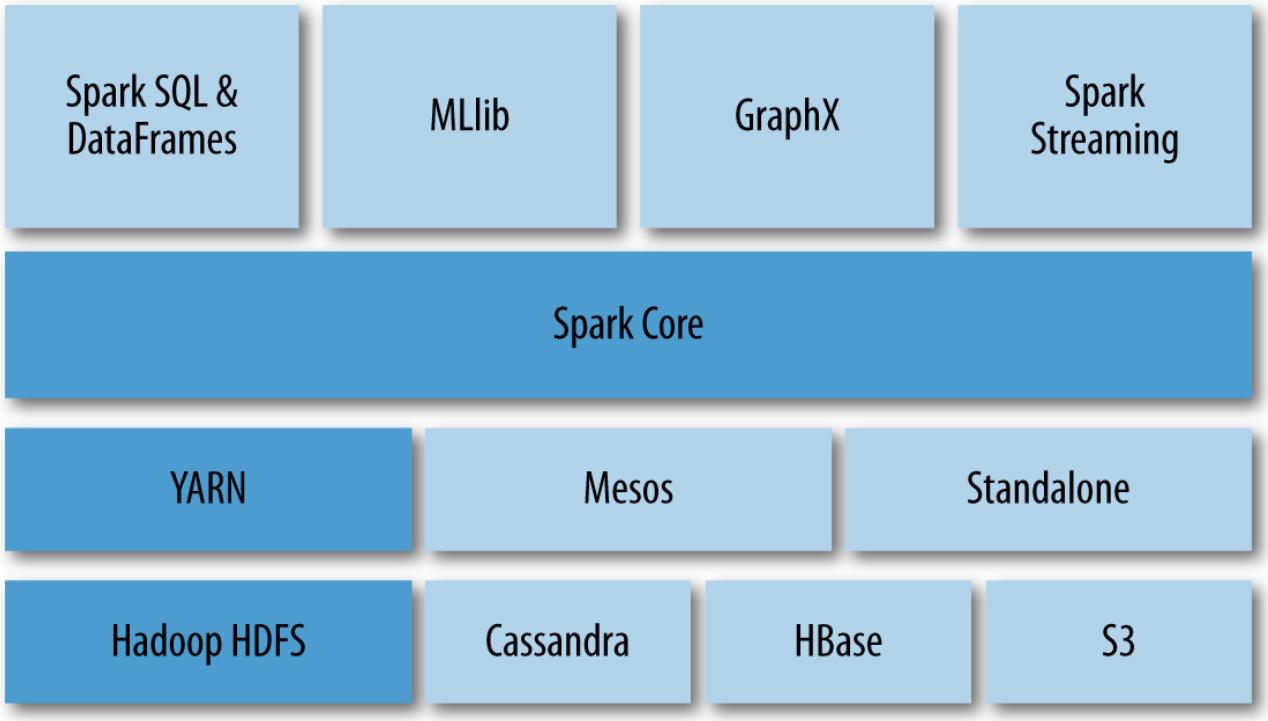
프로젝트 소개

Spark

분산처리 프레임워크 (Scale out)

In-Memory Caching (Ram)

Spark Framework

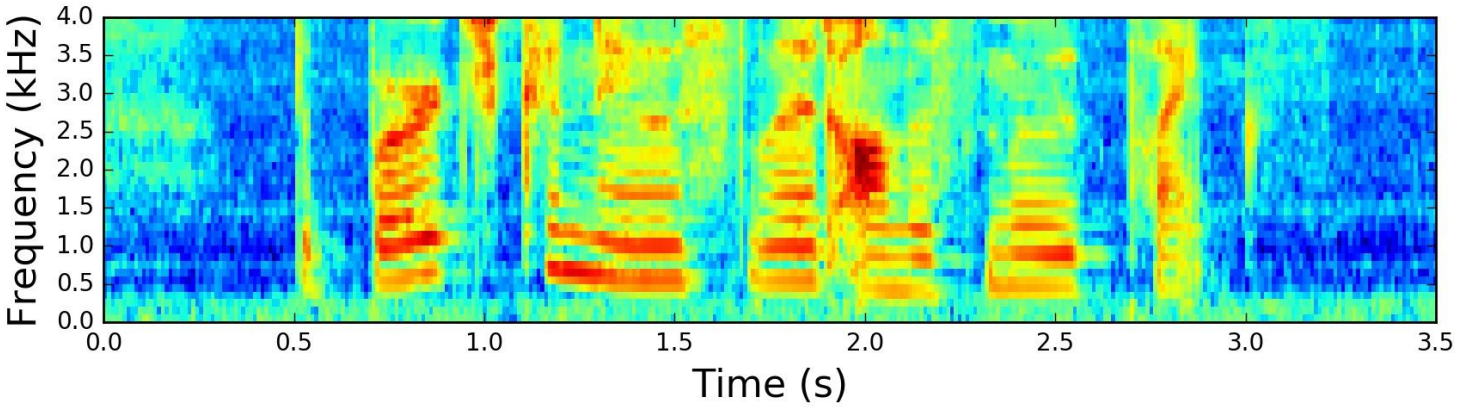


프로젝트 소개

Audio data

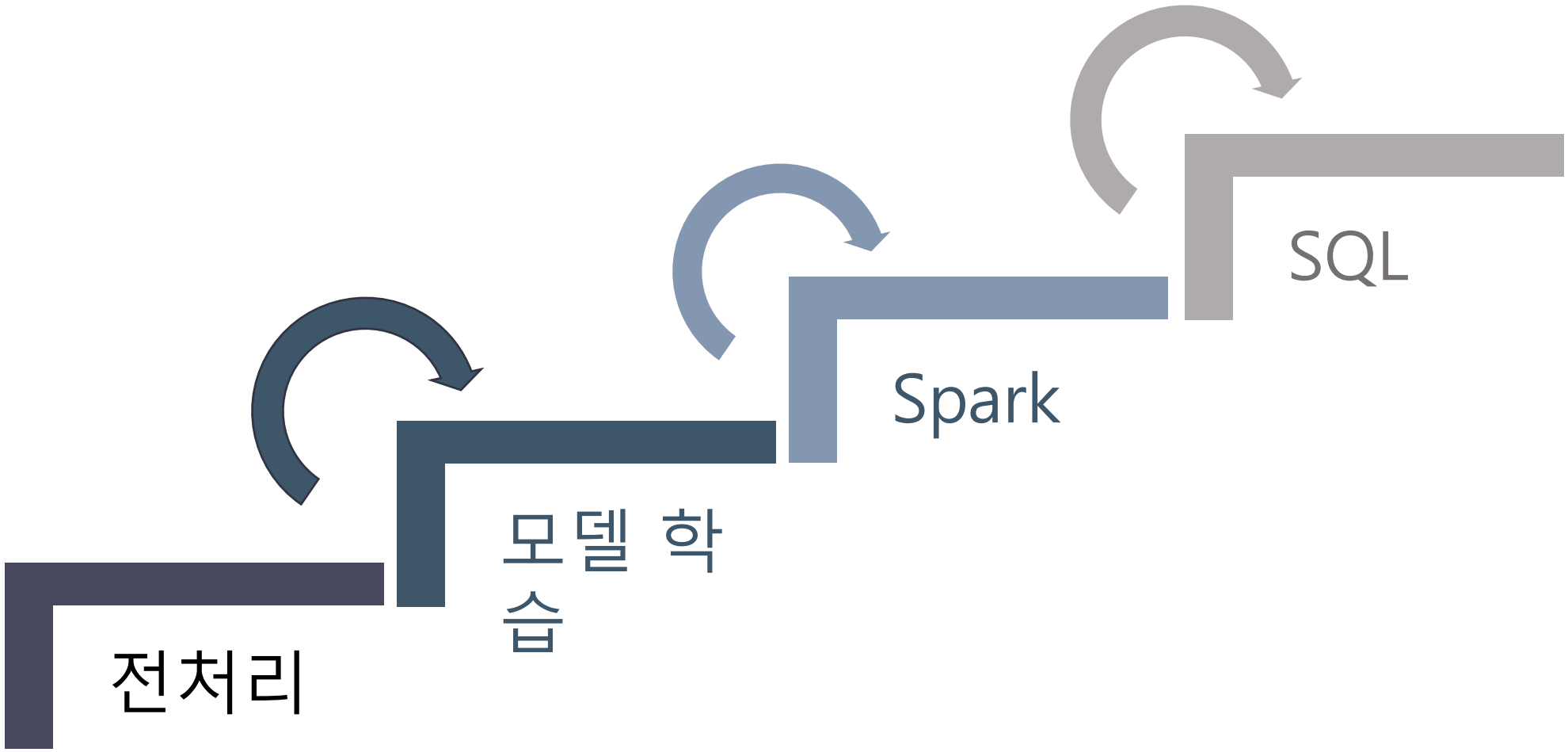
- 시간 당 샘플 수 多
- 일정 시간 범위 내 변화 중요

- 딥러닝에 적합한 구조
- 주파수 분석 (STFT)



프로젝트 소개

Project Flow




2. 모델
Spark

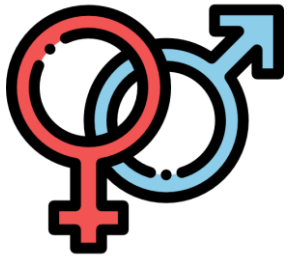
모델

Data Source

RAVDESS(The Ryerson Audio-Visual Database of Emotional Speech and Song)

1440

8 types

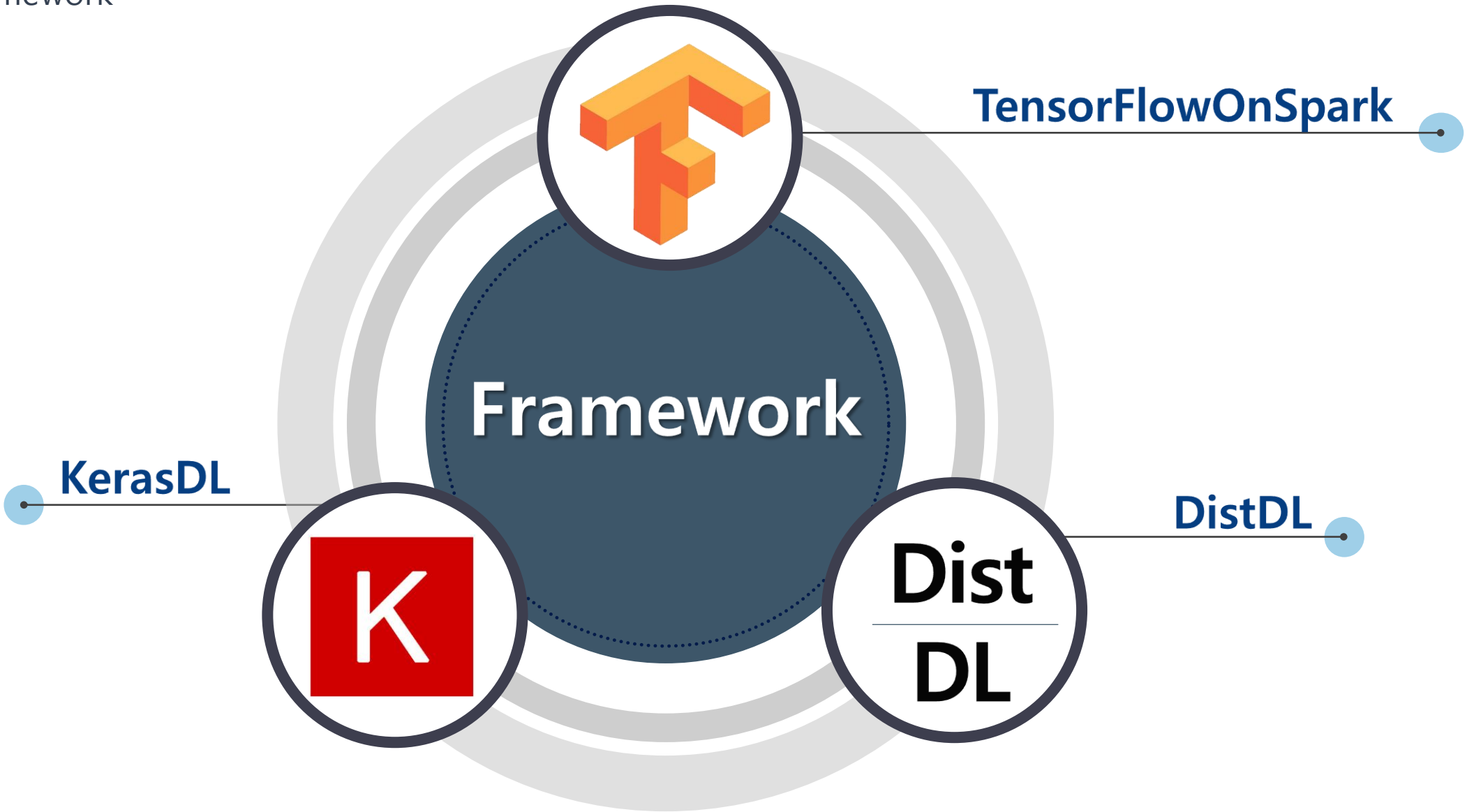


2 types

24 types

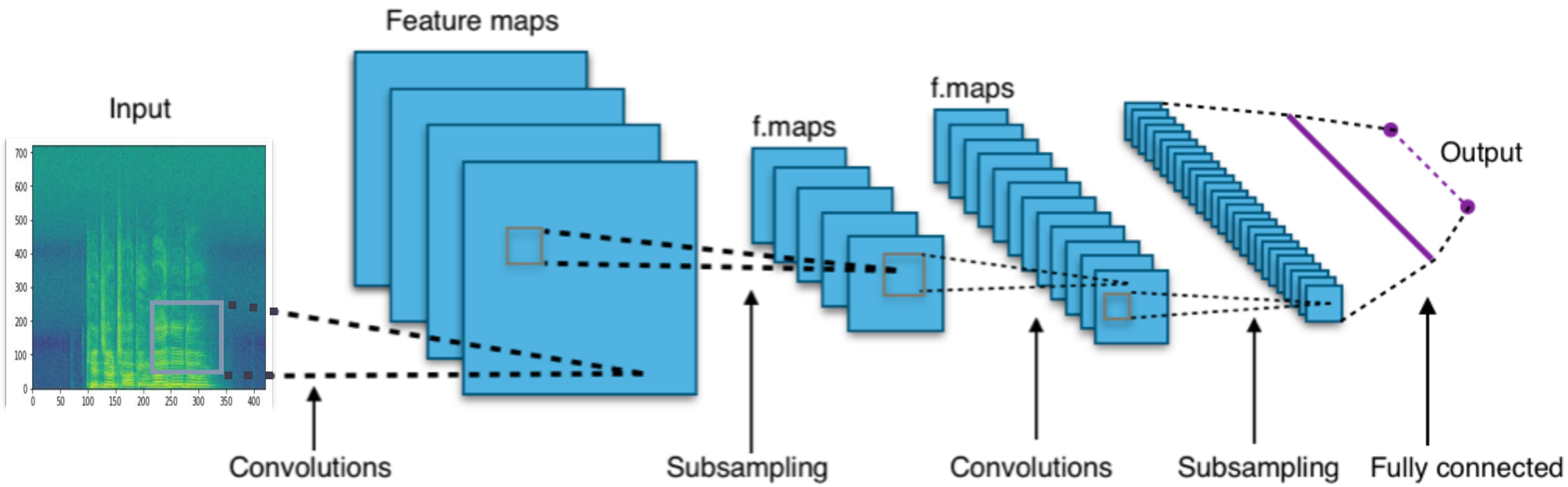
모델

Framework



모델

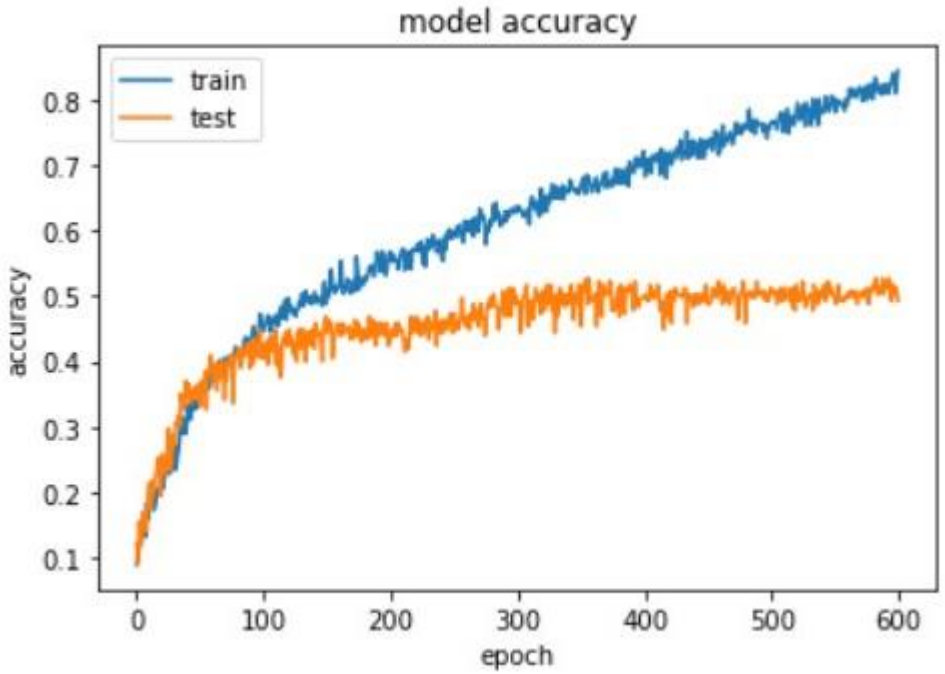
TensorFlow On Spark

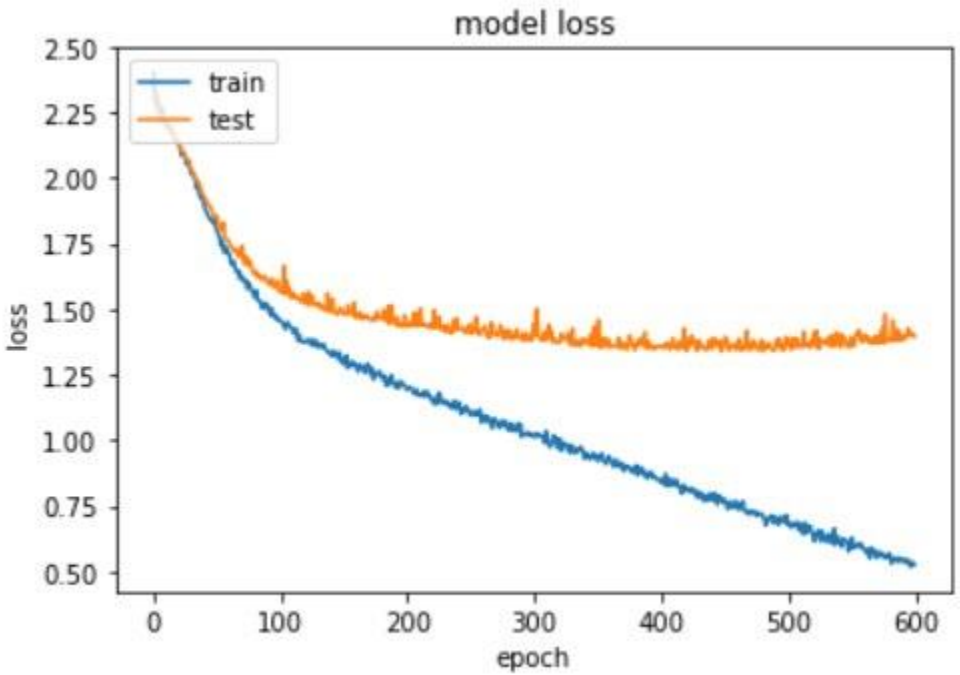


CNN (6 conv layers)

모델

TensorFlow On Spark






3. Spark Pipeline
Spark

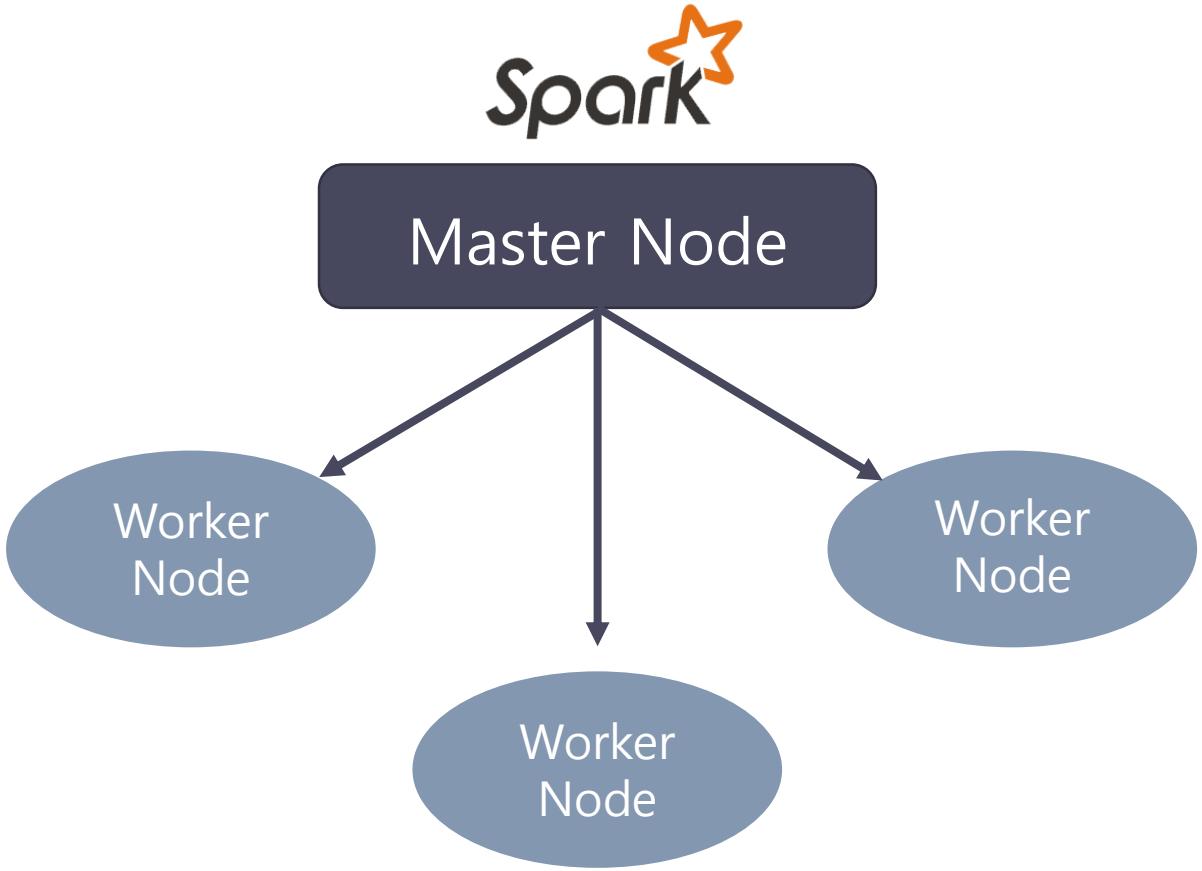
Spark Pipeline

Cluster 구축

데이터 분산

모델 적용

Output
(DataFrame)



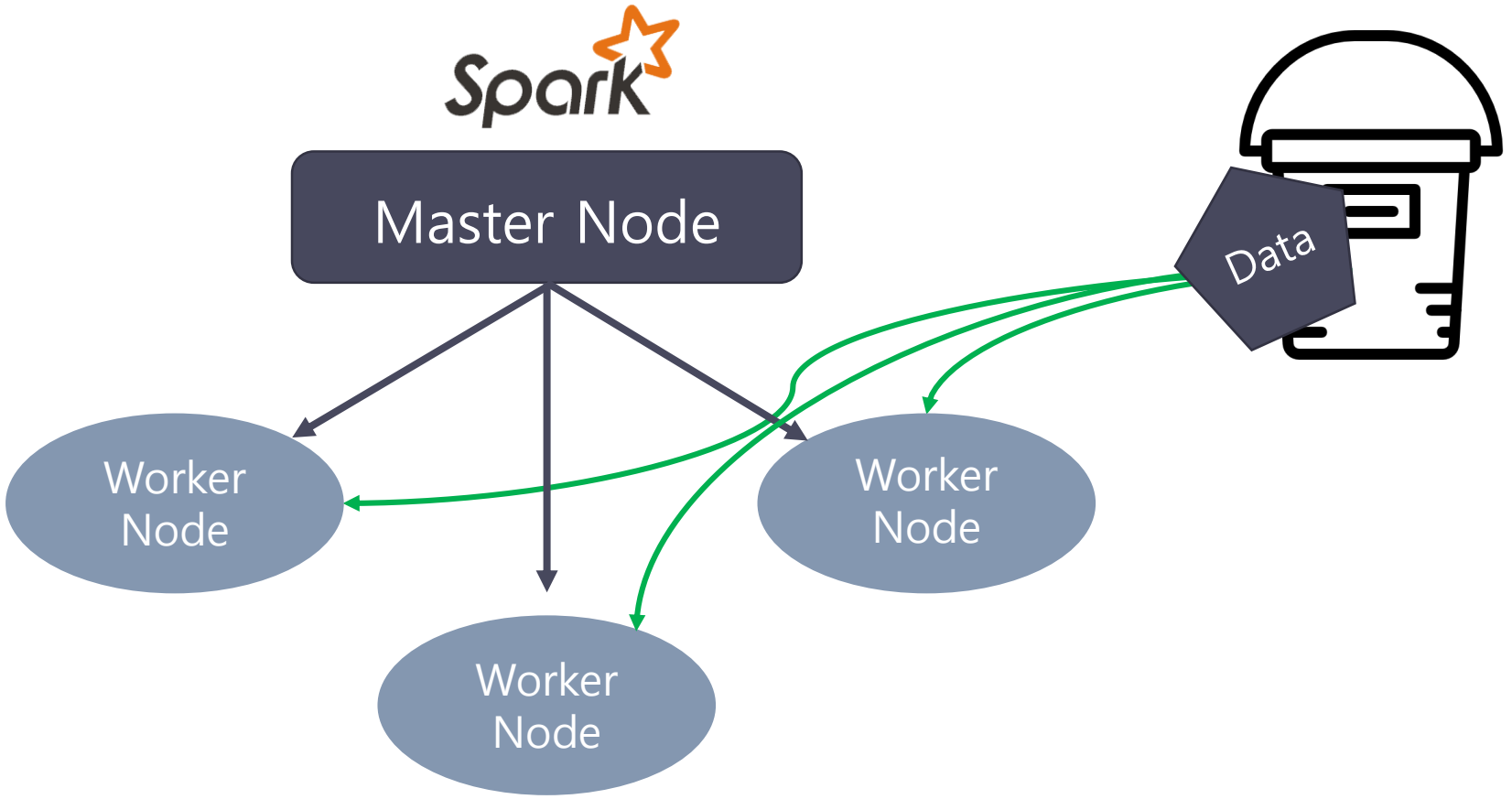
Spark Pipeline

Cluster 구축

데이터 분산

모델 적용

Output
(DataFrame)



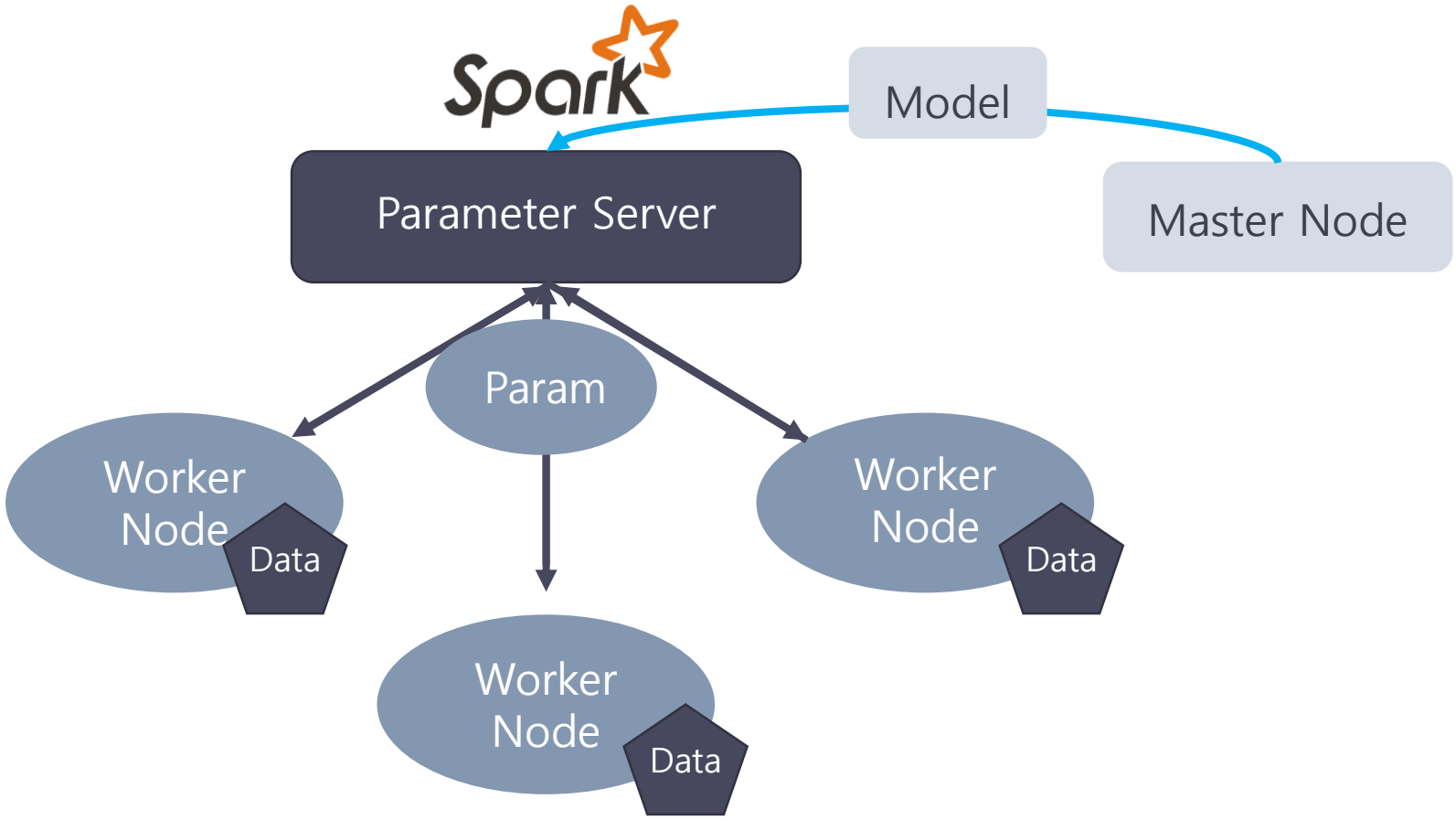
Spark Pipeline

Cluster 구축

데이터 분산

모델 적용

Output
(DataFrame)



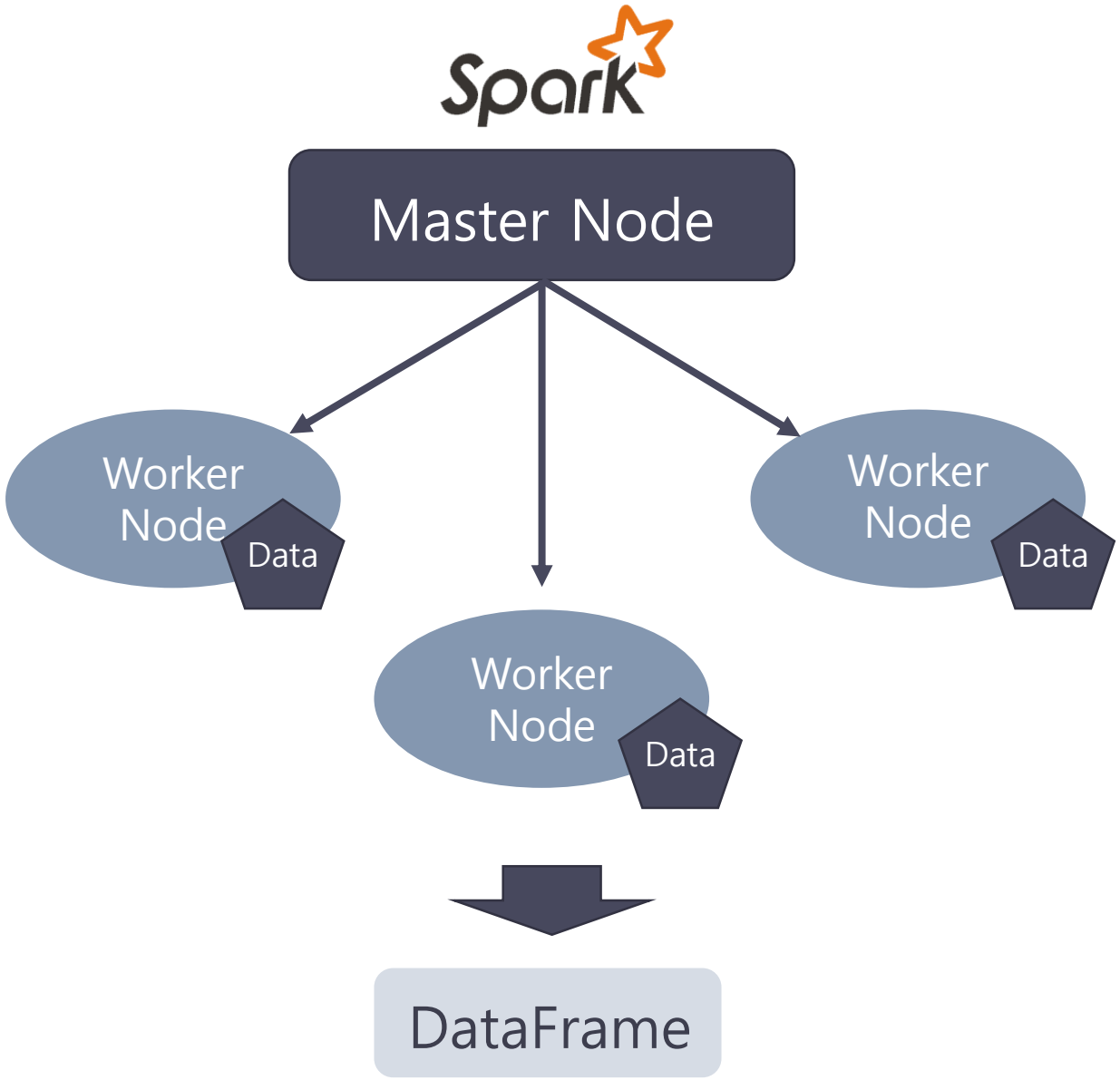
Spark Pipeline

Cluster 구축

데이터 분산

모델 적용

Output
(DataFrame)




4. SQL을 통한 응용
Spark

SQL을 통한 응용

DataFrame

Local

GUI

SQL을 통한 응용

SQL을 통한 응용

```
+--------------------+--------------------+--------------------+----------+----------+----------+----------+----------+
|         predictions|               value|               mfccs|  neu+calm|     happy|   ang+sur|   sad+fea|      disg|
+--------------------+--------------------+--------------------+----------+----------+----------+----------+----------+
|[0.18882152, 0.17...|Wav_Files/03-01-0...|[-804.81903, -806...|0.18882152|0.17232901|0.25592363|0.22189867|0.16102718|
|[0.14377253, 0.17...|Wav_Files/03-01-0...|[-609.98395, -611...|0.14377253|0.17123753| 0.2653008|0.26378334|0.15590572|
|[0.16447033, 0.16...|Wav_Files/03-01-0...|[-750.45874, -750...|0.16447033|0.16471088|0.25915128|0.22537166|0.18629588|
|[0.1856854, 0.178...|Wav_Files/03-01-0...|[-570.43353, -570...| 0.1856854|0.17812116|0.23744874|0.23223446|0.16651022|
|[0.2792408, 0.129...|Wav_Files/03-01-0...|[-827.08405, -824...| 0.2792408|0.12913795|0.17402893| 0.2362057|0.18138655|
|[0.10285803, 0.17...|Wav_Files/03-01-0...|[-718.1724, -718....|0.10285803|0.17729923|0.26686016| 0.3421278|0.11085487|
|[0.1936713, 0.153...|Wav_Files/03-01-0...|[-616.1247, -622....| 0.1936713|0.15303077| 0.2243574|0.24250464|0.18643583|
|[0.16446418, 0.17...|Wav_Files/03-01-0...|[-749.8339, -749....|0.16446418|0.17611656|0.24989544|0.24732114|0.16220273|
|[0.2006708, 0.163...|Wav_Files/03-01-0...|[-868.1018, -847....| 0.2006708|0.16348639|0.22738622|0.23208961|0.17636697|
|[0.18210195, 0.17...|Wav_Files/03-01-0...|[-769.5284, -769....|0.18210195|0.17533876|0.23844942|0.21021679|0.19389306|
|[0.17271101, 0.18...|Wav_Files/03-01-0...|[-767.5163, -769....|0.17271101|0.18898116|0.25108367|0.22409937|0.16312477|
|[0.16807757, 0.18...|Wav_Files/03-01-0...|[-825.41, -825.41...|0.16807757| 0.1803067|  0.256178|0.21676299| 0.1786747|
|[0.18648516, 0.17...|Wav_Files/03-01-0...|[-781.6322, -781....|0.18648516|0.17228913|0.24233371|0.22717156| 0.1717205|
|[0.17521963, 0.16...|Wav_Files/03-01-0...|[-740.6973, -741....|0.17521963|0.16041872| 0.2752341|0.22503957|0.16408792|
|[0.2254974, 0.125...|Wav_Files/03-01-0...|[-828.3688, -829....| 0.2254974| 0.1253762| 0.2152564|0.25927752|0.17459252|
|[0.15131065, 0.16...|Wav_Files/03-01-0...|[-580.4677, -580....|0.15131065| 0.1666995|0.30329734|0.22971533| 0.1489772|
|[0.17311436, 0.17...|Wav_Files/03-01-0...|[-639.9977, -644....|0.17311436|0.17884351| 0.2617495|0.21072891|0.17556374|
|[0.19968975, 0.18...|Wav_Files/03-01-0...|[-714.11847, -715...|0.19968975|0.18545675|0.22376516|0.21158549| 0.1795028|
|[0.20971787, 0.16...|Wav_Files/03-01-0...|[-756.72766, -760...|0.20971787|0.16186248| 0.2387709|0.21490656|0.17474227|
|[0.17047723, 0.17...|Wav_Files/03-01-0...|[-699.96533, -699...|0.17047723|0.17379488|0.26878288|0.22820954|0.15873541|
+--------------------+--------------------+--------------------+----------+----------+----------+----------+----------+
only showing top 20 rows

root
 |-- predictions: array (nullable = false)
 |    |-- element: float (containsNull = false)
 |-- value: string (nullable = true)
 |-- mfccs: array (nullable = true)
 |    |-- element: float (containsNull = true)
 |-- neu+calm: float (nullable = true)
 |-- happy: float (nullable = true)
 |-- ang+sur: float (nullable = true)
 |-- sad+fea: float (nullable = true)
 |-- disg: float (nullable = true)

Write down the query:
```


Q & A
Spark

Thank You

최호선, 김현우, 김태오, 오상신, 임지훈