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ML CONFERENCE

TensorFlow Training
on the JVM

WHEN IS TENSORFLOW+JVM A BAD IDEA?

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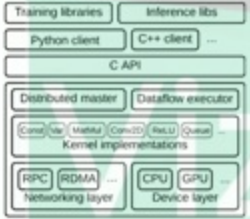
TF BASICS: ARCHITECTURE

- TF runtime is native cross platform code written in C



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TF BASICS: TRAINING

- Create graph (via API or by loading `*.pb`)
- Create session for the graph(API call)
- Init variables, either trigger “init” operation or load `*.index`

- Fill input tensors
- Specify target operations
- Run session

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```
protected open val checkpointSaveNode: String = "save/control_dependency"
/**
 * The graph we are currently working with
 */
protected val graph: Graph = {
    val newGraph = Graph()
    log.debug("Loading graph from $pbResourceName")
    val graphDefBytes = javaClass.getResource(pbResourceName).readBytes()
    newGraph.importGraphDef(graphDefBytes)
    newGraph
}()
/**
 * The session we are working in
 */
protected val session = Session(graph,
    ConfigProto.newBuilder()
        //.setLogDevicePlacement(true) //this logs *a lot* for BERT... only use for debugging
        .setAllowSoftPlacement(true)
        .build().toByteArray()
)
/**
 * Number of instances trained so far - total is independent of batch size,
 * this is incremented by batch size in each training step
 */
protected var instanceCount = 0L
/**
 * Number of epochs trained so far
 */
protected var epochCount = 0


open fun init(workingFolder: File) {
    this.workingFolder = workingFolder
    val lastCheckpoint = findLastCheckpoint() ?:
        throw IllegalStateException("Cannot init TensorFlow model, no last variable state found in $workingFolder.")
```

TensorFlowBase › val graph › {...}

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