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WHEN IS TENSORFLOW+JVM A BAD IDEA?

TensorFlow Training
on the JVM

Christoph Henkelmann
DIVISIO

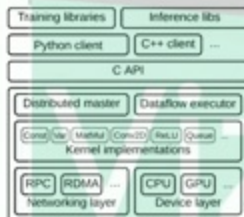
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CHRISTOPH HENKELMANN | DIVISIO GMBH | [HTTPS://DIVIS.IO](https://divis.io)



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

Christoph Henkelmann
DIVISIO





CONFERENCE

TensorFlow Training on the JVM

Christoph Henkelmann
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```

48 protected open val checkpointSaveNode: String = "sav/control_dependency"
49 /**
50  * The graph we are currently working with
51  */
52 protected val graph: Graph = {
53     val newGraph = Graph()
54     log.debug("Loading graph from $pbResourceName")
55     val graphDefBytes = javaClass.getResource(pbResourceName).readBytes()
56     newGraph.importGraphDef(graphDefBytes)
57     lambda newGraph
58 }()
59 /**
60  * The session we are working in
61  */
62 protected val session = Session(graph,
63     ConfigProto.newBuilder()
64         .setLogDevicePlacement(true) //this logs *a lot* for BERT... only use for debugging
65         .setAllowSoftPlacement(true)
66         .build()).toByteArray()
67 )
68 /**
69  * Number of instances trained so far - total is independent of batch size,
70  * this is incremented by batch size in each training step
71  */
72 protected var instanceCount = 0L
73 /**
74  * Number of epochs trained so far
75  */
76 protected var epochCount = 0
77
78
79 open fun init(workingFolder: File) {
80     this.workingFolder = workingFolder
81     val lastCheckpoint = findLastCheckpoint() ?
82         throw IllegalStateException("Cannot init TensorFlow model, no last variable state found in $workingFolder.")
83     TensorFlowBase { TensorFlowBase {
84         TensorFlowBase { val graph = [...]

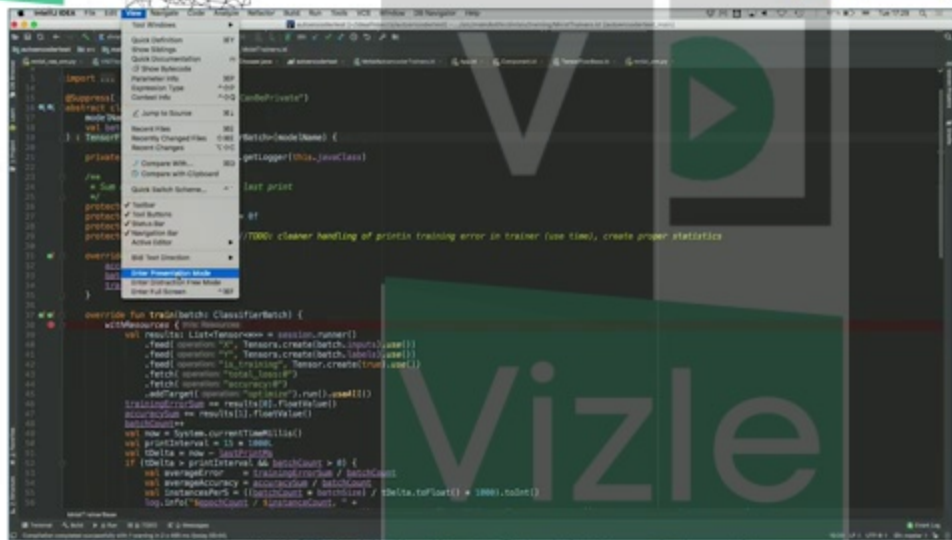
```





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