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# Serialization

This apply will demonstrate the key's JSON serialization, and verify deserialization integrity.

## Raw Json

Code from [SerializationTest.java:89](#) executed in 0.64 seconds (0.156 gc):

```
final JsonObject json = layer.getJson();
@Nonnull final Layer echo = Layer.fromJson(json);
if (echo == null) throw new AssertionError("Failed to deserialize");
if (layer == echo) throw new AssertionError("Serialization did not copy");
if (!layer.equals(echo)) throw new AssertionError("Serialization not equal");
echo.freeRef();
return new GsonBuilder().setPrettyPrinting().create().toJson(json);
```

Returns:

```
{
  "class": "com.simiacyptus.mindseye.network.PipelineNetwork",
  "id": "61374d87-fcb3-4e54-b785-0af1a19489f8",
  "isFrozen": false,
  "name": "PipelineNetwork/61374d87-fcb3-4e54-b785-0af1a19489f8",
  "inputs": [
    "0b999b4d-9381-4b5a-a9c5-a130f55749a2"
  ],
  "nodes": {
    "9393bc5a-f5eb-4da7-b901-b37e256b0af1": "542de883-4c7c-41f2-92c8-0a51054b73ca",
    "de9bfc2-f451-4773-acd5-9417ebf9ac95": "e87af9a1-64e6-4581-92de-6e59b13bfd0e",
    "b7903576-25f6-43d6-87a0-f4c5809737ef": "6d31252d-7b72-47ee-91a2-e5563707e43d",
    "98a4da44-7c9d-4e60-a84f-9a556a2f7b7a": "8b849158-8efe-4cc0-81f7-a443c541e032",
    "9db42166-308c-46cf-b3cc-d1609806b4a7": "967abef9-9058-45d8-82a6-1eeaefff2b10",
    "57b7d592-cfe3-47d8-9590-3f1fd085e0ea": "dee73032-3665-4705-b1fb-edb73fc197a4",
    "374db8df-cda1-4e85-841b-4f615846aa40": "57e5812c-e8f2-40be-a6ab-6a24b3f5d8c5",
    "75ab0be7-078c-49b7-9a7e-6a90afdce8d9": "c2d8ac34-b392-48c1-9c26-f6ab5d7e4f58",
    "66d9f0cb-8bee-4ea6-8b3a-clf487da1fd3": "e168e7a4-7545-422d-9940-46c96144e0eb",
    "2985fef7-b3c1-4d03-8860-8936a98dbd08": "1b5cb1bc-a68b-4856-98bc-21a867e25938",
    "926a7c69-194d-4de2-9d51-e2f98e1f72b8": "045f6df1-0699-4249-8993-f112a98a661d",
    "eddf85c2-ad98-40b1-893f-053897083579": "f603b63c-1c73-4ed2-a103-e592b266e636"
  },
  "layers": {
    "542de883-4c7c-41f2-92c8-0a51054b73ca": {
      "class": "com.simiacyptus.mindseye.network.PipelineNetwork",
      "id": "542de883-4c7c-41f2-92c8-0a51054b73ca",
      "isFrozen": true,
      "name": "PipelineNetwork/542de883-4c7c-41f2-92c8-0a51054b73ca",
      "inputs": [
        "530ec0bf-be02-4139-81c6-b2996d5058ae"
      ],
      "nodes": {
        "03a14962-4ab0-4537-a97d-5d1ebcace273": "74bb5d37-3d22-49a5-84dc-e7a4ed8d40f4",
        "06e35631-5c9d-43b0-a542-850d2f818ef6": "a7420849-484c-45a4-a88f-f6100fcc5cd1",
        "2f840dcc-2475-4e15-a6e0-a708290633c9": "32667d38-8086-4500-b58a-0e46a7c00467"
      }
    }
  }
}
```

```

},
"layers": {
  "74bb5d37-3d22-49a5-84dc-e7a4ed8d40f4": {
    "class": "com.simiacyptus.mindseye.layers.cudnn.conv.SimpleConvolutionLayer",
    "id": "74bb5d37-3d22-49a5-84dc-e7a4ed8d40f4",
    "isFrozen": true,
    "name": "SimpleConvolutionLayer/74bb5d37-3d22-49a5-84dc-e7a4ed8d40f4",
    "filter": {
      "length": [
        7,
        7,
        192
      ],
      "precision": "Double",
      "base64": "P9/V+MAAAAC/00kZwAAAD/frnpAAAAv9waaAAAAAC/4Nk5YAAAAD+ihrwAAI

```

...[skipping 9557202 bytes](#)...

```

U69Lnra2yMBRd070OfVjwFjS5KlGN4bAXtXG+SQ1SMBcdAhEs29xwCJN9o/k6YTAa5hyt3OSgsBfKtInkRfpv
  },
  "06ffb456-9fcd-4405-bfaf-987568bc0e5e": {
    "class": "com.simiacyptus.mindseye.layers.cudnn.SquareActivationLayer",
    "id": "06ffb456-9fcd-4405-bfaf-987568bc0e5e",
    "isFrozen": true,
    "name": "SquareActivationLayer/06ffb456-9fcd-4405-bfaf-987568bc0e5e",
    "precision": "Float",
    "alpha": 1.0
  },
  "0a9d3858-1122-41c9-8493-8b7545cee738": {
    "class": "com.simiacyptus.mindseye.layers.cudnn.AvgReducerLayer",
    "id": "0a9d3858-1122-41c9-8493-8b7545cee738",
    "isFrozen": true,
    "name": "AvgReducerLayer/0a9d3858-1122-41c9-8493-8b7545cee738",
    "precision": "Float"
  },
  "c8deed21-997a-4440-83ab-d17622801575": {
    "class": "com.simiacyptus.mindseye.layers.java.NthPowerActivationLayer",
    "id": "c8deed21-997a-4440-83ab-d17622801575",
    "isFrozen": true,
    "name": "NthPowerActivationLayer/c8deed21-997a-4440-83ab-d17622801575",
    "power": 0.5
  },
  "4193c78a-9c73-4d47-856e-a602a702e533": {
    "class": "com.simiacyptus.mindseye.layers.java.LinearActivationLayer",
    "id": "4193c78a-9c73-4d47-856e-a602a702e533",
    "isFrozen": true,
    "name": "LinearActivationLayer/4193c78a-9c73-4d47-856e-a602a702e533",
    "weights": [
      0.018184036473064318,
      0.0
    ]
  }
},
"links": {
  "eec9eb75-a57c-4b0f-9639-8ec87ac7c34c": [
    "f4a73ba6-1481-437e-b347-72cc6165ddb3"
  ],
  "5c20571f-bd11-4e43-b1bd-0307a7b34589": [
    "eec9eb75-a57c-4b0f-9639-8ec87ac7c34c"
  ],
  "b90039cc-5ca6-4f61-b843-c2f60cddebbb": [
    "5c20571f-bd11-4e43-b1bd-0307a7b34589"
  ],
  "9f9e41a8-8432-4987-aa2d-576ffaafdfdb": [
    "b90039cc-5ca6-4f61-b843-c2f60cddebbb"
  ],
  "80af5547-d376-43ed-87bd-de1aba6b5396": [

```

```

        "9f9e41a8-8432-4987-aa2d-576ffaafdfdb"
    ],
    },
    "labels": {},
    "head": "80af5547-d376-43ed-87bd-de1aba6b5396"
},
"045f6df1-0699-4249-8993-f112a98a661d": {
    "class": "com.simiacryptus.mindseye.layers.java.LinearActivationLayer",
    "id": "045f6df1-0699-4249-8993-f112a98a661d",
    "isFrozen": true,
    "name": "LinearActivationLayer/045f6df1-0699-4249-8993-f112a98a661d",
    "weights": [
        0.1,
        0.0
    ]
},
"f603b63c-1c73-4ed2-a103-e592b266e636": {
    "class": "com.simiacryptus.mindseye.layers.java.SumInputsLayer",
    "id": "f603b63c-1c73-4ed2-a103-e592b266e636",
    "isFrozen": false,
    "name": "SumInputsLayer/f603b63c-1c73-4ed2-a103-e592b266e636"
}
},
"links": {
    "9393bc5a-f5eb-4da7-b901-b37e256b0af1": [
        "0b999b4d-9381-4b5a-a9c5-a130f55749a2"
    ],
    "de9bfc2-f451-4773-acd5-9417ebf9ac95": [],
    "b7903576-25f6-43d6-87a0-f4c5809737ef": [
        "0b999b4d-9381-4b5a-a9c5-a130f55749a2",
        "de9bfc2-f451-4773-acd5-9417ebf9ac95"
    ],
    "98a4da44-7c9d-4e60-a84f-9a556a2f7b7a": [
        "b7903576-25f6-43d6-87a0-f4c5809737ef"
    ],
    "9db42166-308c-46cf-b3cc-d1609806b4a7": [
        "9393bc5a-f5eb-4da7-b901-b37e256b0af1"
    ],
    "57b7d592-cfe3-47d8-9590-3f1fd085e0ea": [
        "9db42166-308c-46cf-b3cc-d1609806b4a7"
    ],
    "374db8df-cda1-4e85-841b-4f615846aa40": [
        "57b7d592-cfe3-47d8-9590-3f1fd085e0ea"
    ],
    "75ab0be7-078c-49b7-9a7e-6a90afdce8d9": [
        "9db42166-308c-46cf-b3cc-d1609806b4a7"
    ],
    "66d9f0cb-8bee-4ea6-8b3a-c1f487da1fd3": [
        "75ab0be7-078c-49b7-9a7e-6a90afdce8d9"
    ],
    "2985fef7-b3c1-4d03-8860-8936a98dbd08": [
        "66d9f0cb-8bee-4ea6-8b3a-c1f487da1fd3"
    ],
    "926a7c69-194d-4de2-9d51-e2f98e1f72b8": [
        "98a4da44-7c9d-4e60-a84f-9a556a2f7b7a"
    ],
    "eddf85c2-ad98-40b1-893f-053897083579": [
        "374db8df-cda1-4e85-841b-4f615846aa40",
        "2985fef7-b3c1-4d03-8860-8936a98dbd08",
        "926a7c69-194d-4de2-9d51-e2f98e1f72b8"
    ]
},
"labels": {},
"head": "eddf85c2-ad98-40b1-893f-053897083579"
}

```

[Wrote Model to PipelineNetwork\\_getLogcom.simiacryptus.mindseye.test.unit.SerializationTest.json: 9589970 characters](#)

## Zipfile Uniform8

[Wrote Model apply Uniform8 precision to getLogcom.simiacryptus.mindseye.test.unit.  
SerializationTest\\_Uniform8.zip; 0.715MiB bytes](#)

## Zipfile Uniform16

[Wrote Model apply Uniform16 precision to getLogcom.simiacryptus.mindseye.test.unit.  
SerializationTest\\_Uniform16.zip; 1.328MiB bytes](#)

## Zipfile Float

[Wrote Model apply Float precision to getLogcom.simiacryptus.mindseye.test.unit.  
SerializationTest\\_Float.zip; 2.056MiB bytes](#)

## Zipfile Uniform32

[Wrote Model apply Uniform32 precision to getLogcom.simiacryptus.mindseye.test.unit.  
SerializationTest\\_Uniform32.zip; 2.083MiB bytes](#)

## Zipfile Double

[Wrote Model apply Double precision to getLogcom.simiacryptus.mindseye.test.unit.  
SerializationTest\\_Double.zip; 2.738MiB bytes](#)