Automatic generated report CNET0021.

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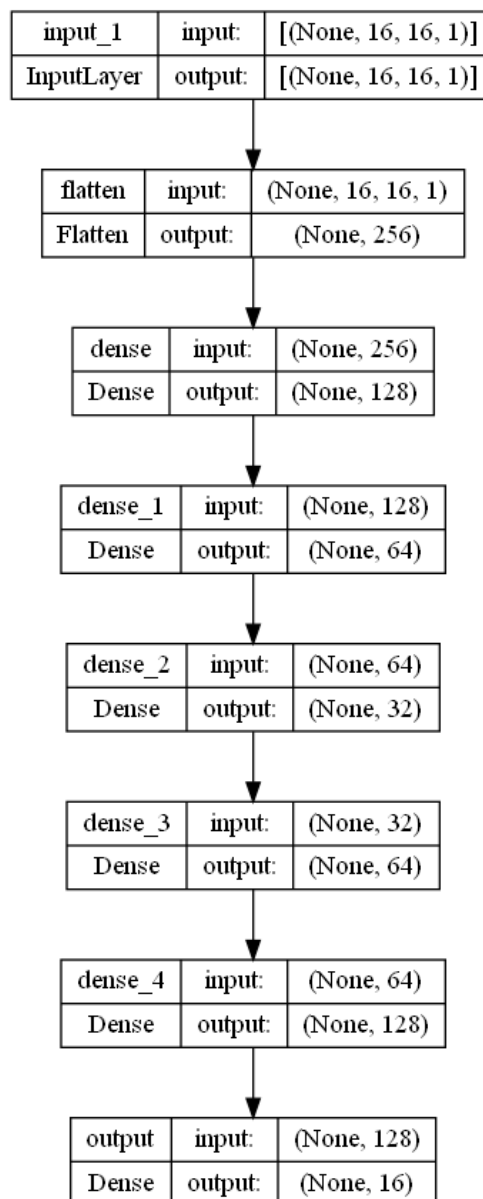

Fig. 1: Model visualization

1 Model

The model has been compiled successfully with the following parameters:

Layer	Shape	Attributes
Flatten	(None,)	
Dense	(128,)	
Dense	(64,)	
Dense	(32,)	
Dense	(64,)	
Dense	(128,)	

Tab. 1: Model architecture and attributes.

─────────────────────────────── Model summary ───────────────────────────────

```
Model: "model_0"

----------------------------------------------------------------
 Layer type              Output Shape            Param #
================================================================
 input_1 InputLayer      [None, 8, 8, 1]         0

 flatten Flatten         None, 64                0

 dense Dense             None, 128               8320

 dense_1 Dense           None, 64                8256

 dense_2 Dense           None, 32                2080

 dense_3 Dense           None, 64                2112

 dense_4 Dense           None, 128               8320

 output Dense            None, 8                 1032

================================================================
Total params: 30,120
Trainable params: 30,120
Non-trainable params: 0
----------------------------------------------------------------
Model: "model_0"
----------------------------------------------------------------
 Layer type              Output Shape            Param #
================================================================
 input_1 InputLayer      [None, 8, 8, 1]         0

 flatten Flatten         None, 64                0

 dense Dense             None, 128               8320

 dense_1 Dense           None, 64                8256
```

```
 dense_2 Dense          None, 32           2080

 dense_3 Dense          None, 64           2112

 dense_4 Dense          None, 128          8320

 output Dense           None, 8            1032

=================================================================
Total params: 30,120
Trainable params: 30,120
Non-trainable params: 0
-----------------------------------------------------------------
Model: "model_0"
-----------------------------------------------------------------
 Layer type             Output Shape           Param #
=================================================================
 input_1 InputLayer     [None, 8, 8, 1]        0

 flatten Flatten        None, 64               0

 dense Dense            None, 128              8320

 dense_1 Dense          None, 64               8256

 dense_2 Dense          None, 32               2080

 dense_3 Dense          None, 64               2112

 dense_4 Dense          None, 128              8320

 output Dense           None, 8                1032

=================================================================
Total params: 30,120
Trainable params: 30,120
Non-trainable params: 0
-----------------------------------------------------------------
Model: "model_0"
-----------------------------------------------------------------
 Layer type             Output Shape           Param #
=================================================================
 input_1 InputLayer     [None, 16, 16, 1]      0

 flatten Flatten        None, 256              0

 dense Dense            None, 128              32896

 dense_1 Dense          None, 64               8256

 dense_2 Dense          None, 32               2080

 dense_3 Dense          None, 64               2112

 dense_4 Dense          None, 128              8320

 output Dense           None, 16               2064

=================================================================
Total params: 55,728
Trainable params: 55,728
```

```
Non-trainable params: 0
_____
```

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1.1   Compiler

- *Problem specifications.* The input shape mesh is *(16, 16, 1)*, while the output shape is (*16*).

- *Compiling options.* The model makes use of the *mean squared error* loss function and the *adam* optimizer. The metrics taken into account are accuracy and loss.

- *Devices.* The model was trained with 1GPUs.

2   Database

The database **32k 16t 0w** was generated with *hypertrain*. The training - validation - test distribution is *'train': 70, 'validation': 20, 'test': 10* and the total size of the database is *(22938, 6554, 3276)*.

3   Performance

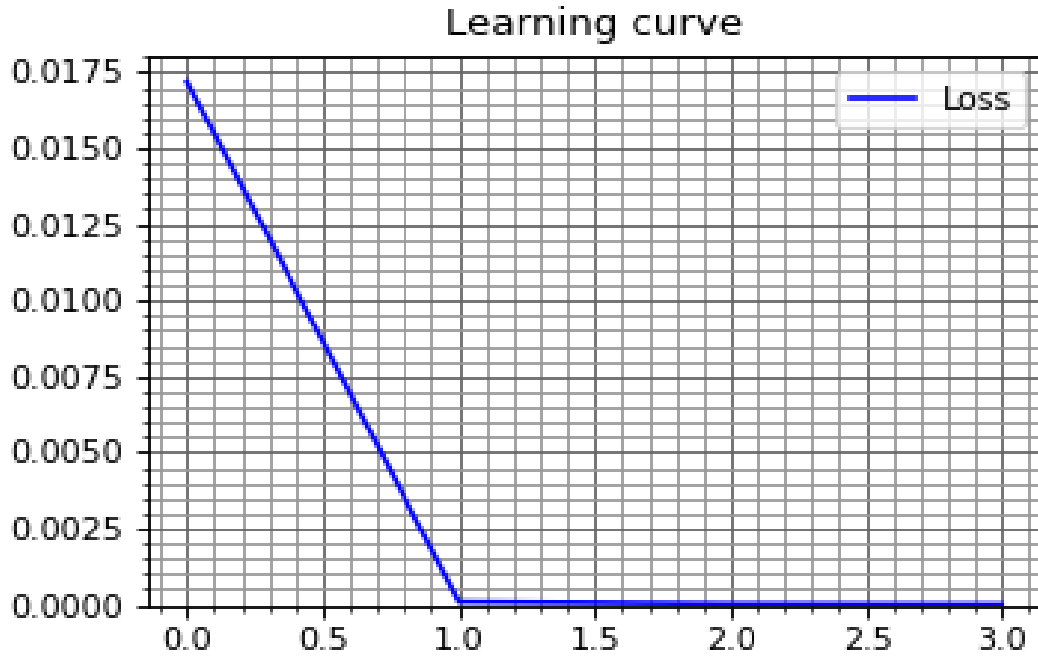The obtained learning curve is shown below. With **maxloss**: 0.0172, and **minloss**: 0.0.

Fig. 2: Learning curve with the introduced database.