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1 import keras
2 from keras.losses import mean_squared_error as mse
3 from keras.optimizers import SGD
4
5 from mlair.model_modules import AbstractModelClass
6
7 from mlair.workflows import DefaultWorkflow
8
9 class MyCustomisedModel(AbstractModelClass):
10
11     """
12     A customised model with a 1x1 Conv, and 2 Dense layers (16,
13     output shape). Dropout is used after Conv layer.
14     """
15     def __init__(self, input_shape: list, output_shape: list):
16
17         # set attributes _input_shape and _output_shape
18         super().__init__(input_shape[0], output_shape[0])
19
20         # apply to model
21         self.set_model()
22         self.set_compile_options()
23         self.set_custom_objects(loss=self.compile_options['loss'])
24
25     def set_model(self):
26         x_input = keras.layers.Input(shape=self._input_shape)
27         x_in = keras.layers.Conv2D(32, (1, 1))(x_input)
28         x_in = keras.layers.PReLU()(x_in)
29         x_in = keras.layers.Flatten()(x_in)
30         x_in = keras.layers.Dropout(0.1)(x_in)
31         x_in = keras.layers.Dense(16)(x_in)
32         x_in = keras.layers.PReLU()(x_in)
33         x_in = keras.layers.Dense(self._output_shape)(x_in)
34         out = keras.layers.PReLU()(x_in)
35         self.model = keras.Model(inputs=x_input, outputs=[out])
36
37     def set_compile_options(self):
38         self.initial_lr = 1e-2
39         self.optimizer = SGD(lr=self.initial_lr, momentum=0.9)
40         self.loss = mse
41         self.compile_options = {"metrics": ["mse", "mae"]}
42
43     # Make use of MyCustomisedModel within the DefaultWorkflow
44     workflow = DefaultWorkflow(model=MyCustomisedModel, epochs=2)
45     workflow.run()

```