

Summary

Dataset

our dataset is 30 samples

split into 85% - 15% segments for training and validation sets respectively.

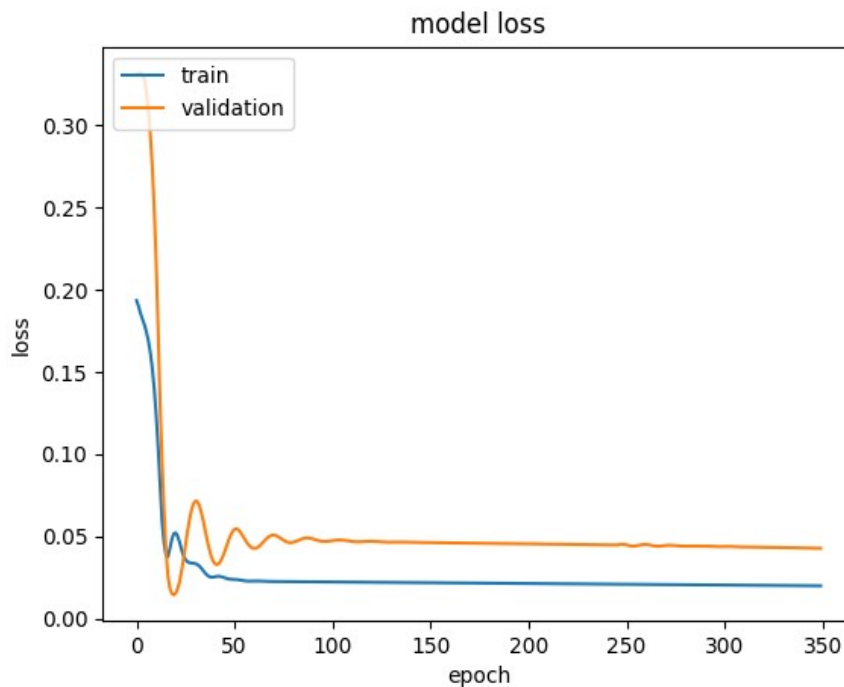
Model

the deep learning model is built with the python Keras framework
as this is a regression problem here's our model architecture.

Model architecture & Hyper parameters

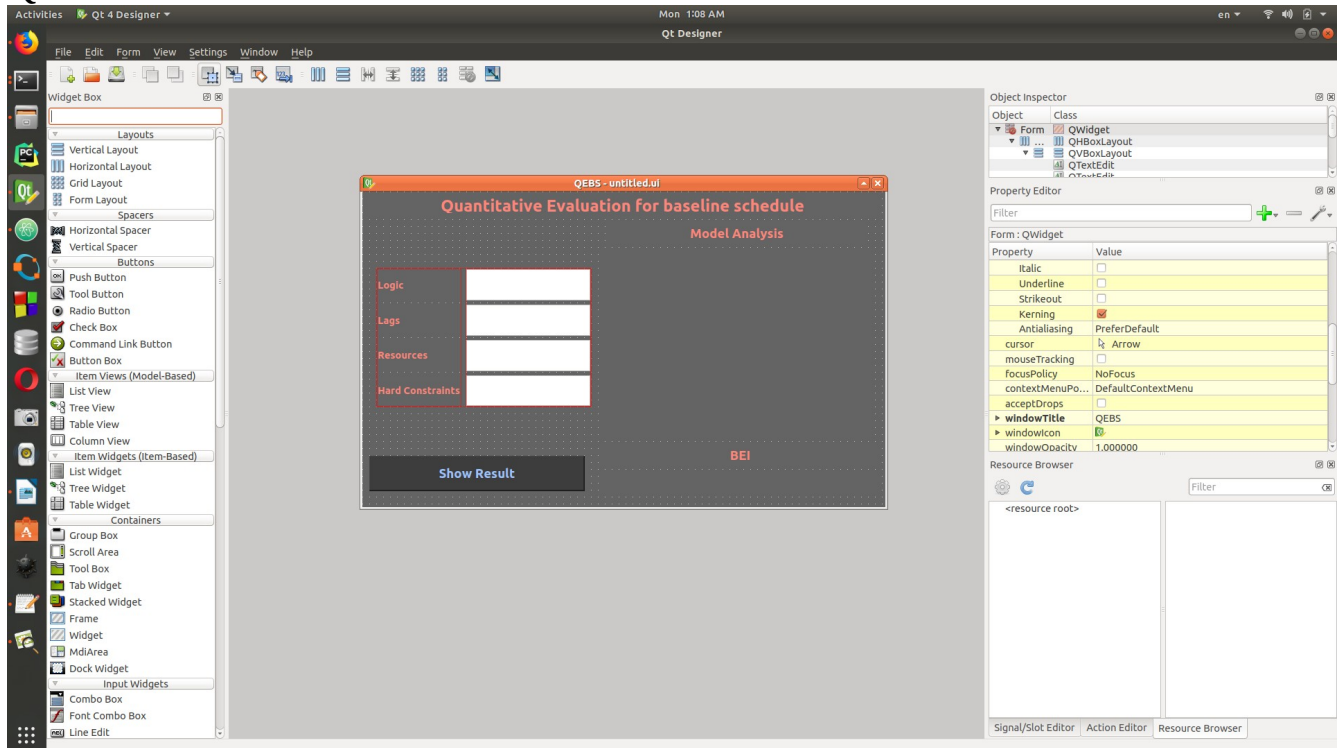
- **Input layer** : 4 input nodes
- **Hidden layer 1** : 32 nodes
- **Activation function**: ReLU
- **Hidden layer 2** : 8 nodes
- **Activation function**: ReLU
- **Hidden layer 3** : 8 nodes
- **Activation function**: ReLU
- **Output layer** : 1 node
- **Activation function**: Sigmoid
- **Loss** : MSE (mean squared error)
- **Optimizer** : Adam

Model Loss Graph

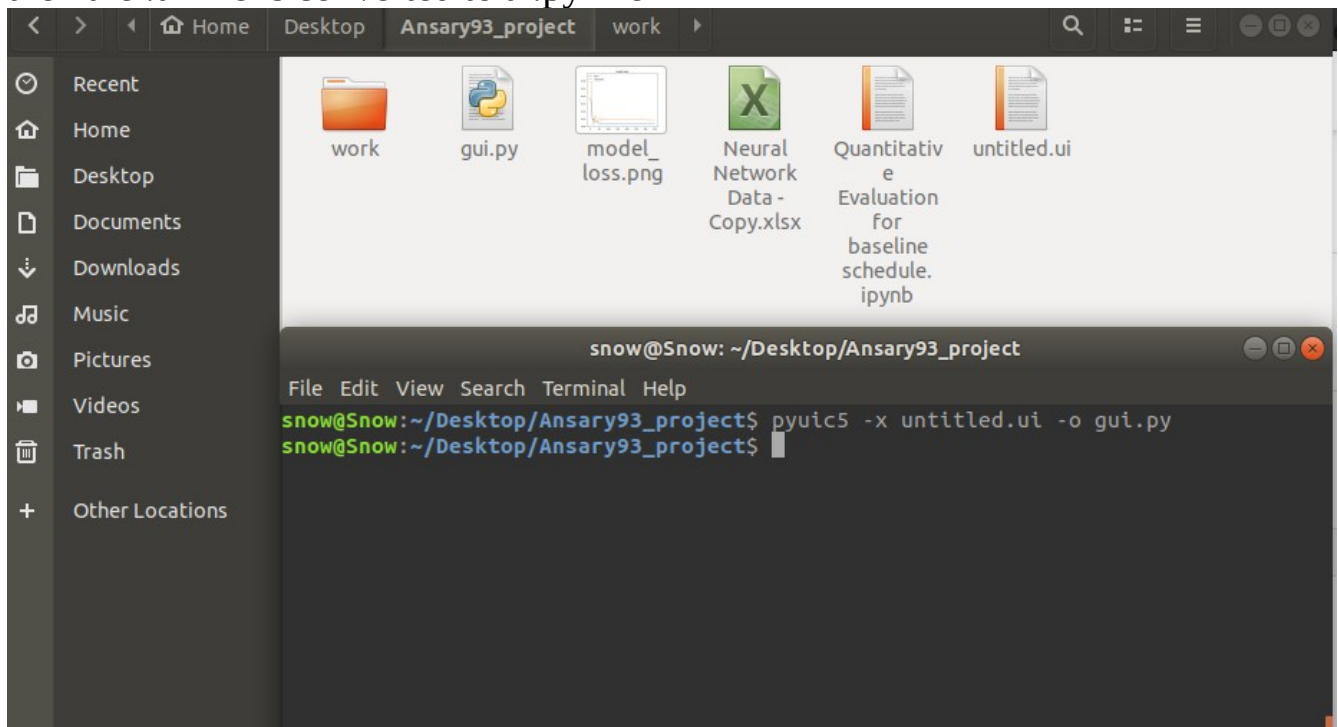


Graphical User Interface

QT framework is used to build the GUI .ui file



then the .ui file is converted to a .py file



then we started working on the .py file with the PyQt5 library

```
18
19 class Ui_Form(object):
20     def setupUi(self, Form):
21         Form.setObjectName("Form")
22         Form.resize(755, 455)
23         Form.setStyleSheet("background-color: rgb(100, 100, 100);")
24         self.pushButton = QtWidgets.QPushButton(Form)
25         self.pushButton.setGeometry(QtCore.QRect(10, 381, 311, 51))
26         font = QtGui.QFont()
27         font.setPointSize(14)
28         font.setBold(True)
29         font.setWeight(75)
30         self.pushButton.setFont(font)
31         self.pushButton.setStyleSheet("color: rgb(158, 195, 255);\n"
32 "background-color: rgb(61, 61, 61);")
33         self.pushButton.setObjectName("pushButton")
34         self.pushButton.clicked.connect(self.process)
35         self.label_image = QtWidgets.QLabel(Form)
36         self.label_image.setGeometry(QtCore.QRect(346, 90, 391, 261))
37         self.label_image.setText("")
38         self.label_image.setObjectName("label_image")
39         self.label_result = QtWidgets.QLabel(Form)
40         self.label_result.setGeometry(QtCore.QRect(350, 410, 391, 21))
41         font = QtGui.QFont()
42         font.setPointSize(18)
43         font.setBold(True)
44         font.setWeight(75)
45         self.label_result.setFont(font)
46         self.label_result.setStyleSheet("color: rgb(255, 134, 123);\n"
47 "color: rgb(0, 195, 0);")
48         self.label_result.setText("")
49         self.label_result.setAlignment(QtCore.Qt.AlignCenter)
50         self.label_result.setObjectName("label_result")
51         self.label_5 = QtWidgets.QLabel(Form)
52         self.label_5.setGeometry(QtCore.QRect(10, 10, 731, 21))
53         font = QtGui.QFont()
54         font.setPointSize(18)
55         font.setBold(True)
56         font.setWeight(75)
57         self.label_5.setFont(font)
58         self.label_5.setStyleSheet("color: rgb(255, 134, 123);")
59         self.label_5.setAlignment(QtCore.Qt.AlignCenter)
60         self.label_5.setObjectName("label_5")
61         self.label_6 = QtWidgets.QLabel(Form)
62
```