This code if to identify the type of obstacle map and get the suitable sampling method with corresponding number of nodes.

1. Install Required Libraries:

In [ ]:
```
##1).Make sure you have TensorFlow and other necessary libraries installed. You can install them using:
```

In [ ]:
```
import tensorflow as tf
from tensorflow.keras import layers, models
from tensorflow.keras.preprocessing.image import ImageDataGenerator
import numpy as np
import matplotlib.pyplot as plt
from tensorflow.keras.callbacks import ReduceLROnPlateau
from tensorflow.keras.utils import plot_model
```

Dataset Preparation:

In [ ]:
```
##1).Organize your dataset into training and test sets and place them in the specified directories (Train_set and Test_set).
```

Adjust File Paths:

In [ ]:
```
##1).Replace the directory paths in the code with the paths to your actual dataset and the new image you want to predict
#(new_image_path).
```

Class Labels:

In [ ]:
```
##1).Update the class names in the classes parameter for both train_generator and test_generator to match your specific
#obstacle classes.
```

Run the Code:

In [ ]:
```
##1).Run the script in a Python environment. Ensure that your Python environment is properly set up.
```

Interpret Results:

In [ ]:
```
##1).Examine the training history plot for accuracy trends. The code will evaluate the model on the test set and print the
#test accuracy.

##2).For a new image (Map17.png in this case), the code will predict the obstacle class and suggest a sampling method and
#number of nodes based on the predicted class.
```

Model Architecture Visualization:

In [ ]:
```
##1).The script generates a visual representation of the model architecture with colored legends for different layer types
#(model_plot.png).
```

In [ ]:
```
##1).Note: Ensure that the necessary image files, directories, and paths are correctly specified. Adjust the parameters,
#such as the number of epochs (epochs), as needed for your specific requirements.
```

In [ ]:
```
#For any clarifications, please feel free to reach out to 'drouniyar@wpi.edu'.
```