**Traffic:**

Developing a neural network to recognize a traffic sign from photographs

**Experimentation:**

Started with a base model using:

* 1 convolutional layer, learning 32 filters using a 3x3 kernel
* 1 max-pooling layer, using a 2x2 pool size
* Output layer with output units for all traffic sign categories

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| **SR No.** | **Modification** | **Accuracy** |
| 1 | Base model | 0.9344 |
| 2 | In base model, Changed Convolution Kernel to (5,5) | 0.9379 |
| 3 | To base model added 2nd Convolution layer | 0.9469 |
| 4 | In base model, Changed Pooling size to (5,5) | 0.9008 |
| 5 | To base model added 2nd Max-Pooling layer | 0.7009 |

After this testing I concluded that a model with 2 Convolution layers, learning 32 filters using (3x3) kernel and 1 Max-Pooling layer gave best results. Let’s call this Model 2.

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| **SR** **No**. | **Modification** | **Accuracy** |
| 1 | Added Dropout of 0.2 to Model 2 | 0.9764 |
| 2 | Added 1 Hidden layer with 32 nodes per category | 0.9599 |
| 3 | Added Dropout of 0.2 to the hidden layer | 0.9779 |
| 4 | Added another Hidden layer with 16 nodes per category | 0.9634 |
| 5 | Added another hidden layer with 8 nodes per category | 0.9708 |

**Final Results:**

Thus, a Model with: with 2 Convolution layers, learning 32 filters using (3x3) kernel, 1 Max-Pooling layer, dropout of 0.2 and Hidden layer with 32 nodes per category and dropout 0.2 gave best results.

However, The Final model: with 2 Convolution layers, learning 32 filters using (3x3) kernel, 1 Max-Pooling layer, dropout of 0.2, 1 Hidden layer with 32 nodes per category and dropout 0.2, 1 Hidden layer with 16 nodes per category and a last hidden layer with 8 nodes per category followed by an output layer with output units for each traffic label gave good results (Accuracy: 0.9708) and is well fitted to validate external data.