run_neural_network

This application is designed to operate each neural network API. This application includes APIs, such as CreateNetwork, CreateInputTensor, CreateOutputTensor, LoadNetwork, and RunNetwork.

- Possible Scenario:
  Loading and running a neural network to receive processing results from the model is a possible scenario.

API

API	Return	Parameter	Description
GetOrCreateNetwork	NeuralNetwork*	const string& name	Creates a neural network instance when a neural network with the name you entered does not exist.
CreateInputTensor	shared_ptr	const string &name	Creates an input tensor with a name specifically reserved for the model input
CreateOutputTensor	shared_ptr	const string &name	Creates an output tensor with a name specifically reserved for the model output
LoadNetwork	bool	const string &bin	Loads a neural network into memory
RunNetwork	bool	stat_t &	Runs the neural network
UnloadNetwork	void	-	Unloads a neural network from memory
GetInputTensor	shared_ptr	const string &name	Gets an input tensor by name
GetInputTensor	shared_ptr	size_t index	Gets an input tensor by index
GetOutputTensor	shared_ptr	const string &name	Gets an output tensor by name
GetOutputTensor	shared_ptr	size_t index	Gets an output tensor by index
GetAllInputTensors	vector<shared_ptr>	-	Gets all Input tensor
GetAllOutputTensors	vector<shared_ptr>	-	Gets all output tensor

API	Return	Parameter	Description
GetInputTensorCount	size_t	-	Gets the count of Input tensor.
GetOutputTensorCount	size_t	-	Gets the count of Output tensor.

Using the Neural Network API

The methods listed below are examples of "google_net use".

- Create a neural network.

```
auto network = GetOrCreateNetwork("google_net.bin");
```

- Create a Input Tensor.

```
const shared_ptr<Tensor>& input_tensor(network-
>CreateInputTensor("data_0"));
```

- Create a Output Tensor.

```
const shared_ptr<Tensor>& output_tensor(network-
>CreateOutputTensor("prob_1"));
```

- Load a neural network into memory

```
bool result;
result = network->LoadNetwork("../res/ai_bin/google_net.bin");
```

- Run the neural network into memory

```
bool result;
stat_t stat = { 0, };
result = network->RunNetwork(stat);
```

- Unload a neural network from memory

```
network->UnloadNetwork();
RemoveNetwork("google_net.bin");
```

- Get an InputTensor using the tensor name.

```
const shared_ptr<Tensor> &input_tensor(network-
>GetInputTensor("data_0"));
```

- Get an InputTensor using the tensor index.

```
const shared_ptr<Tensor> &input_tensor(network->GetInputTensor(0));
```

- Get an OutputTensor using the tensor name.

```
const shared_ptr<Tensor>& output_tensor(network-
>GetOutputTensor("prob_1"));
```

- Get an OutputTensor using the tensor index.

```
const shared_ptr<Tensor>& output_tensor(network->GetOutputTensor(0));
```

- Get all InputTensors.

```
const vector<shared_ptr<Tensor>>& all_input_tensor(network-
>GetAllInputTensors());
```

- Get all OutputTensors.

```
const vector<shared_ptr<Tensor>>& all_output_tensor(network-
>GetAllOutputTensors());
```

- Get the number of InputTensors.

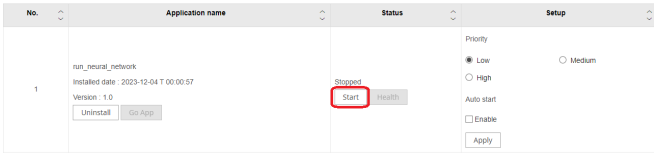
```
size_t input_tensor_count = network->GetInputTensorCount();
```

- Get the number of OutputTensors.

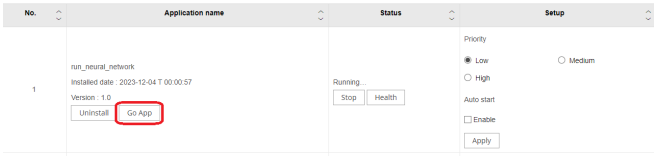
```
size_t output_tensor_count = network->GetOutputTensorCount();
```

Running Neural Network

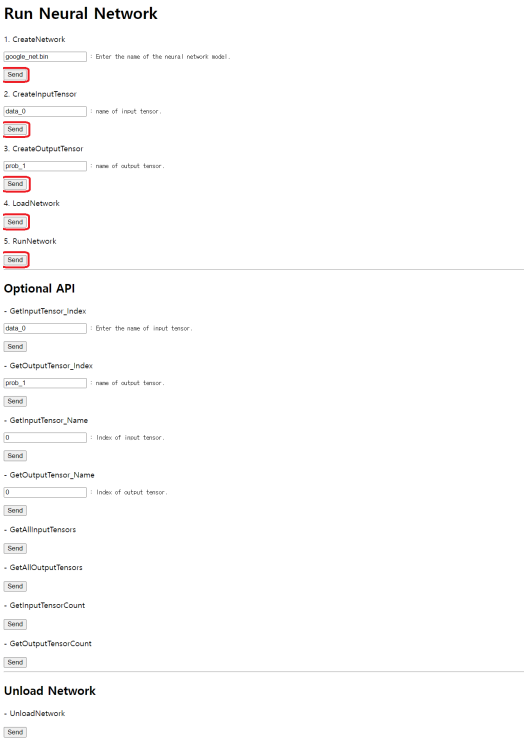
- Click [Start] on the web page.

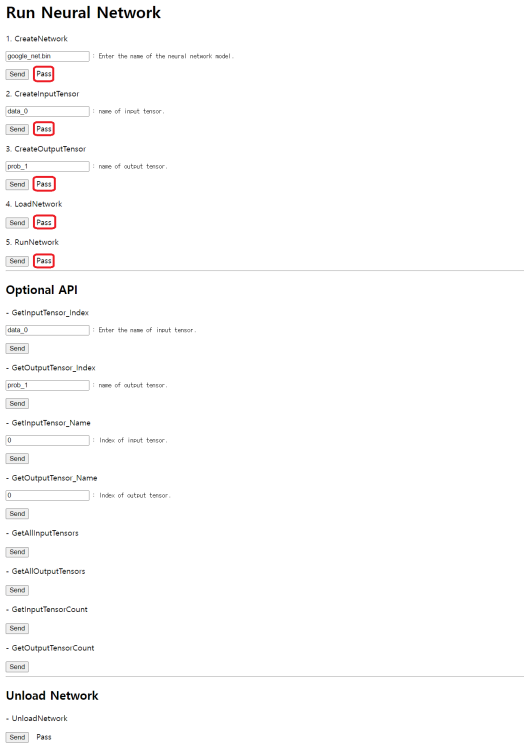


- Once the application is running, click [Go App].

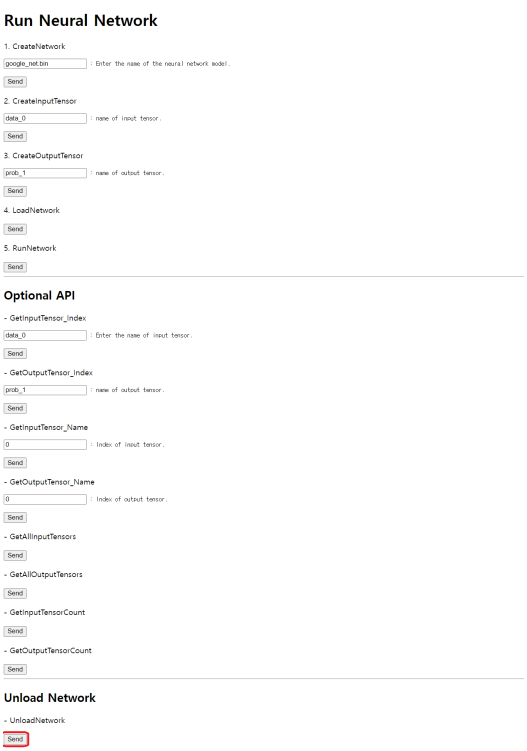


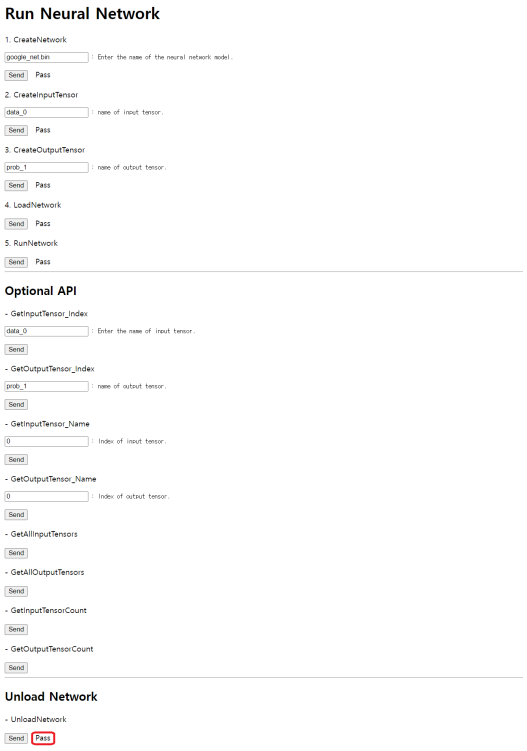
- To run the neural network, click all [Send] buttons in order from the top. [CreateNetwork]>[CreateInputTensor]>[CreateOutputTensor]>[LoadNetwork]>[RunNetwork].



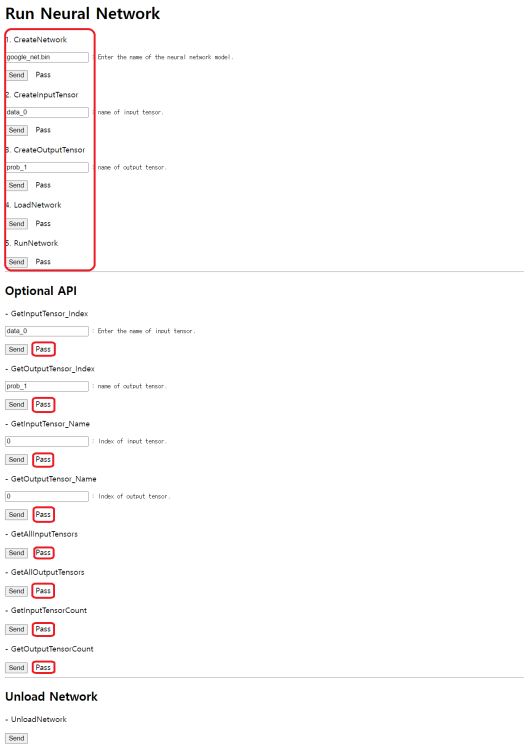


- To terminate the neural network, click [Send] below [UnloadNetwork].





- To use the Optional API, create the network and tensor.



Building Application

1. Build application.

```
$ APP_NAME=run_neural_network SDK_VER=24.06.14(your SDK version)
SOC=[cv5, jetson] docker compose up
$ docker compose down --remove-orphans
```

2. Check the build results in current directory. If successful, you will be able to find the cap file.