AI Project

Create a search function to search in a NAS space for the best performing **CNN architecture** on fashion-mnist.

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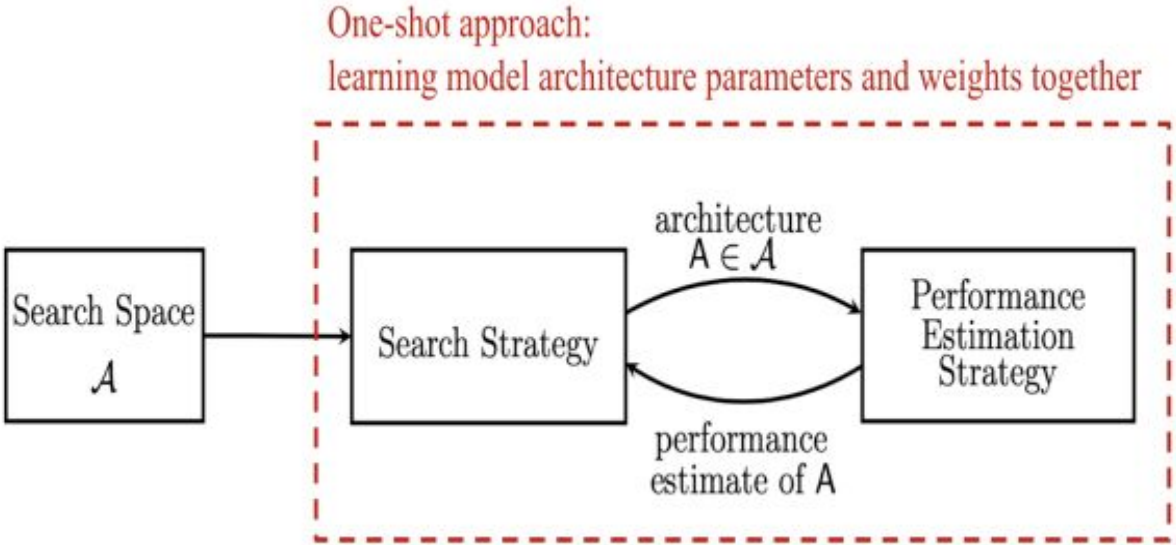
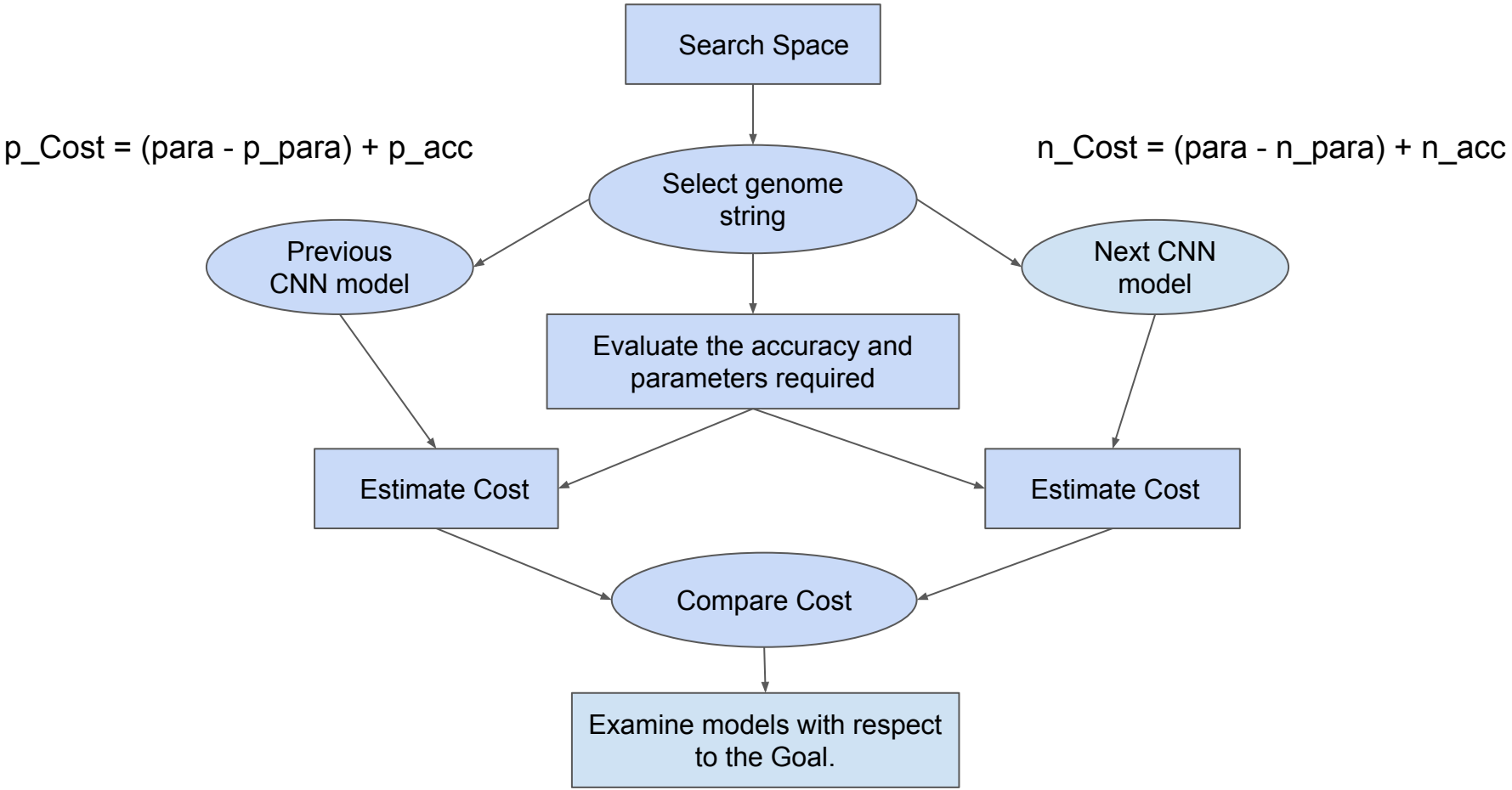
Methodology Followed:




Search Space
p_Cost = (para - p_para) + p_acc
n_Cost = (para - n_para) + n_acc
Select genome string
Previous CNN model
Next CNN model
Evaluate the accuracy and parameters required
Estimate Cost
Estimate Cost
Compare Cost
Examine models with respect to the Goal.

Result

1.

```
1
0 iteration cost 7552.891900002956
2 iteration cost 602862.7681000233
Next 2 602862.7681000233
[1, 1]
Iterations Req 1
Best Model Found: NC 64 1 gelu;NC 64 3 gelu;NC 64 1 gelu;RC 128 3 gelu;NC 128 1 gelu;NC 128 3 gelu;NC 128 1 gelu;RC 256 3 gelu;FL relu; with Accuracy 0.9215000271
```

```
print(model_Accuracy)
print(model_Parameters)
```

```
[0.8919000029563904, 0.921500027179718, 0.7681000232696533]
[600394, 607946, 5084]
```

2.

```
[3, 4, 5]
Iterations Req 2
Best Model Found: RC 10 3 tanh;NC 20 3 relu;RC 10 3 swish;FL swish; with Accuracy 0.7602666616439819
```

```
print(model_Accuracy)
print(model_Parameters)
```

```
[0, 0, 0.47369998693466187, 0.6786333322525024, 0.09884999692440033, 0.7602666616439819, 0, 0, 0, 0]
[0, 0, 54346, 37834, 29578, 5084, 0, 0, 0, 0]
```

3.

```
18 iteration cost -95753.17823332548
Prev 16 740.6491333246231
Index followed [17, 17]
Iterations Req 1
Best Model Found: RC 20 3 relu;NC 10 3 tanh;RC 20 3 relu;FL sigmoid; with Accuracy 0.7607499957084656
```

```
print(model_Accuracy)
print(model_Parameters)
```

```
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0.6491333246231079, 0.7607499957084656, 0.8217666745185852]
[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 5084, 5824, 101578]
```

ThankYou!