

Hyperparameter tuning

Datasets: "electricity", "traffic", "m4_hourly", "m4_daily", "m4_weekly", "m4_monthly", "m4_quarterly", "solar-energy"

```
"context_length": trial.suggest_int("context_length", dataset.metadata.prediction_length,  
"max_epochs": trial.suggest_int("max_epochs", 1, 10, 1),  
"batch_size": trial.suggest_int("batch_size", 128, 256, 64),  
"embed_dim": trial.suggest_int("embed_dim", 16, 32, 4),
```

model	mean_quantile_loss
tft	electricity

```
Number of finished trials: 10  
Best trial:  
  Value: 0.931355221184196  
  Params:  
    context_length: 132  
    max_epochs: 8  
    batch_size: 192  
    embed_dim: 20  
3127.4850652217865
```

model	mean_quantile_loss
tft	traffic

```
Best trial:  
  Value: 0.16899027625855664  
  Params:  
    context_length: 168  
    max_epochs: 3  
    batch_size: 192  
    embed_dim: 28  
3217.79998588562
```

model	MSE
Switch	ett

Value: 16.680092906289634
Params:
context_length: 96
max_epochs: 5
batch_size: 128
num_encoder_layers: 10
num_decoder_layers: 2
n_experts: 8
1359.9514563083649

model	
Switch	Electricity

Number of finished trials: 10
Best trial:
Value: 0.11605724268008008
Params:
context_length: 164
max_epochs: 3
batch_size: 256
num_encoder_layers: 2
num_decoder_layers: 6
n_expert: 4
capacity_factor: 3
3118.5556769371033

model	
Switch	traffic

Number of finished trials: 10
Best trial:
Value: 0.18142237220263696
Params:
context_length: 104
max_epochs: 5
batch_size: 256
num_encoder_layers: 6
num_decoder_layers: 2
n_expert: 6
capacity_factor: 3
4102.975602388382

```
Number of finished trials: 10
Best trial:
  Value: 0.0008310123579780195
  Params:
    context_length: 52
    max_epochs: 9
    batch_size: 128
    num_encoder_layers: 2
    num_decoder_layers: 6
    n_experts: 8
  4047.5383710861206
```

model	
Switch	M4hourly

```
Number of finished trials: 10
Best trial:
  Value: 0.08577764888748692
  Params:
    context_length: 204
    max_epochs: 3
    batch_size: 128
    num_encoder_layers: 6
    num_decoder_layers: 6
    n_expert: 4
    capacity_factor: 1
  1873.1055178642273
```

model	
Switch	M4daily

```
Number of finished trials: 10
Best trial:
  Value: 0.03494459290225152
  Params:
    context_length: 34
    max_epochs: 9
    batch_size: 256
    num_encoder_layers: 6
    num_decoder_layers: 2
    n_expert: 8
    capacity_factor: 4
1606.1300139427185
```

```
Number of finished trials: 10
Best trial:
  Value: 621292.4133305061
  Params:
    context_length: 14
    max_epochs: 5
    batch_size: 192
    num_encoder_layers: 10
    num_decoder_layers: 6
    n_experts: 12
1921.99338555336
```

model	
Switch	m4_weekly

```
Number of finished trials: 10
Best trial:
  Value: 0.03494459290225152
  Params:
    context_length: 34
    max_epochs: 9
    batch_size: 256
    num_encoder_layers: 6
    num_decoder_layers: 2
    n_expert: 8
    capacity_factor: 4
1606.1300139427185
```

Number of finished trials: 10
Best trial:
Value: 695244.1323449602
Params:
context_length: 21
max_epochs: 7
batch_size: 256
num_encoder_layers: 2
num_decoder_layers: 14
n_experts: 16
920.2365419864655

model	
Switch	m4_monthly

Best trial:
Value: 2543099.793247089
Params:
context_length: 22
max_epochs: 3
batch_size: 128
num_encoder_layers: 6
num_decoder_layers: 2
n_experts: 4
9059.524876594543

model	
Switch	m4_quaterly

Number of finished trials: 10
Best trial:
Value: 4445106.5104279285
Params:
context_length: 16
max_epochs: 7
batch_size: 192
num_encoder_layers: 6
num_decoder_layers: 6
n_experts: 4
3671.908849000931

model	
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Switch	solar-energy
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Best trial:
Value: 0.4045175062727927
Params:
context_length: 24
max_epochs: 9
batch_size: 192
num_encoder_layers: 2
num_decoder_layers: 6
n_expert: 8
capacity_factor: 2
1323.1266992092133

model	
hopfield	electricity

Number of finished trials: 10
Best trial:
Value: 0.11527914737570584
Params:
context_length: 104
max_epochs: 9
batch_size: 128
num_encoder_layers: 6
num_decoder_layers: 2
3888.313143014908

model	
hopfield	traffic

Number of finished trials: 10
Best trial:
Value: 0.18881279304145454
Params:
context_length: 32
max_epochs: 7
batch_size: 256
num_encoder_layers: 10
num_decoder_layers: 6
6598.49356675148

model	
hopfield	M4hourly

Number of finished trials: 10
Best trial:
Value: 0.11287488017826686
Params:
context_length: 204
max_epochs: 1
batch_size: 256
num_encoder_layers: 2
num_decoder_layers: 10
1426.9056849479675

model	
hopfield	M4_daily

Number of finished trials: 10
Best trial:
Value: 0.03476939487903519
Params:
context_length: 58
max_epochs: 9
batch_size: 192
num_encoder_layers: 10
num_decoder_layers: 6
3098.6852416992188

model	
hopfield	M4_weekly

Number of finished trials: 10
Best trial:
Value: 0.07295828910461012
Params:
context_length: 25
max_epochs: 9
batch_size: 256
num_encoder_layers: 6
num_decoder_layers: 10
977.3590581417084

model	
hopfield	m4_quarterly

Number of finished trials: 10
Best trial:
Value: 0.15899591745116184
Params:
context_length: 28
max_epochs: 5
batch_size: 256
num_encoder_layers: 10
num_decoder_layers: 10
8555.077548265457

model	
hopfield	Solar-energy

Number of finished trials: 10
Best trial:
Value: 0.4793065858844815
Params:
context_length: 48
max_epochs: 1
batch_size: 192
num_encoder_layers: 6
num_decoder_layers: 2
1596.1012649536133

model	Dataset
Autoformer	electricity

Number of finished trials: 10
Best trial:
Value: 0.07133018313833187
Params:
context_length: 140
max_epochs: 7
batch_size: 256
num_encoder_layers: 10
num_decoder_layers: 6
2442.6763803958893

Transformer - electricity


```
Number of finished trials: 10
Best trial:
  Value: 0.07182313731847784
  Params:
    context_length: 144
    max_epochs: 9
    batch_size: 192
    num_encoder_layers: 10
    num_decoder_layers: 6
3450.729590654373
```

Traffic

```
Number of finished trials: 10
Best trial:
  Value: 0.142111367078107
  Params:
    context_length: 56
    max_epochs: 5
    batch_size: 128
    num_encoder_layers: 2
    num_decoder_layers: 2
3839.466874361038
```

m4_hourly

```
Number of finished trials: 10
Best trial:
  Value: 0.08146593395272377
  Params:
    context_length: 180
    max_epochs: 1
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 14
1128.844086408615
```

m4_daily

```
Number of finished trials: 10
Best trial:
  Value: 0.06634347916965506
  Params:
    context_length: 240
    max_epochs: 5
    batch_size: 192
    num_encoder_layers: 10
    num_decoder_layers: 14
1348.6855251789093
```

m4_monthly

```
Number of finished trials: 10
Best trial:
  Value: 0.08146593395272377
  Params:
    context_length: 180
    max_epochs: 1
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 14
1128.844086408615
```

m4_quarterly

```
Number of finished trials: 10
Best trial:
  Value: 0.1550534122209464
  Params:
    context_length: 8
    max_epochs: 7
    batch_size: 128
    num_encoder_layers: 2
    num_decoder_layers: 2
3029.851151704788
```

m4_weekly

```
Number of finished trials: 10
Best trial:
  Value: 0.1550534122209464
  Params:
    context_length: 8
    max_epochs: 7
    batch_size: 128
    num_encoder_layers: 2
    num_decoder_layers: 2
3029.851151704788
```

Solar-energy

```
Number of finished trials: 10
Best trial:
  Value: 0.41235386561468945
  Params:
    context_length: 24
    max_epochs: 7
    batch_size: 128
    num_encoder_layers: 14
    num_decoder_layers: 2
1461.1857089996338
```

Informer-electricity

```
Number of finished trials: 10
Best trial:
  Value: 0.0679689861050846
  Params:
    context_length: 52
    max_epochs: 9
    batch_size: 192
    num_encoder_layers: 6
    num_decoder_layers: 2
3424.786896944046
```

Traffic

```
Number of finished trials: 10
Best trial:
  Value: 0.13412510919939793
  Params:
    context_length: 72
    max_epochs: 9
    batch_size: 256
    num_encoder_layers: 6
    num_decoder_layers: 2
4816.2324204444885
```

m4_hourly

```
Number of finished trials: 10
Best trial:
  Value: 0.08836627486797691
  Params:
    context_length: 240
    max_epochs: 5
    batch_size: 256
    num_encoder_layers: 6
    num_decoder_layers: 2
1775.1519753932953
```

m4_daily

```
Number of finished trials: 10
Best trial:
  Value: 0.031201685692806964
  Params:
    context_length: 46
    max_epochs: 5
    batch_size: 192
    num_encoder_layers: 6
    num_decoder_layers: 14
2139.015619277954
```

m4_weekly

```
Number of finished trials: 10
Best trial:
  Value: 0.060738383665733635
  Params:
    context_length: 41
    max_epochs: 9
    batch_size: 128
    num_encoder_layers: 6
    num_decoder_layers: 14
1208.4142150878906
```

m4_monthly

```
Number of finished trials: 10
Best trial:
  Value: 0.1353015227628872
  Params:
    context_length: 26
    max_epochs: 5
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 2
    num_batches_per_epoch: 100
8953.875318050385
```

m4_quarterly

```
Number of finished trials: 10
Best trial:
  Value: 0.09751847658706624
  Params:
    context_length: 28
    max_epochs: 9
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 10
    num_batches_per_epoch: 100
2564.8050694465637
```

Solar-energy


```
Number of finished trials: 10
Best trial:
  Value: 0.03954733285898994
  Params:
    context_length: 332
    max_epochs: 7
    batch_size: 256
721.8301591873169
```

m4_daily

```
Number of finished trials: 10
Best trial:
  Value: 0.0342240840183455
  Params:
    context_length: 26
    max_epochs: 7
    batch_size: 256
753.6703073978424
```

m4_monthly

```
Number of finished trials: 10
Best trial:
  Value: 0.13386941521428142
  Params:
    context_length: 58
    max_epochs: 7
    batch_size: 256
1113.8821601867676
```

m4_quarterly

```
Number of finished trials: 10
Best trial:
  Value: 0.16324424782524308
  Params:
    context_length: 56
    max_epochs: 9
    batch_size: 128
776.0510497093201
```

solar-energy

```
Number of finished trials: 10
Best trial:
  Value: 0.3995012432539942
  Params:
    context_length: 168
    max_epochs: 9
    batch_size: 128
1398.4920308589935
```

m4_daily

```
Number of finished trials: 10
Best trial:
  Value: 0.03598495343714022
  Params:
    context_length: 26
    max_epochs: 7
    batch_size: 192
786.9864156246185
```

xFormer
Electricity

```
Best trial:
  Value: 0.07158168295075448
  Params:
    context_length: 24
    max_epochs: 5
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 2
    hidden_layer_multiplier: 3
7909.756347417831
```

Traffic


```
Number of finished trials: 10
Best trial:
  Value: 0.4227773704541765
  Params:
    context_length: 36
    max_epochs: 5
    batch_size: 128
    num_encoder_layers: 2
    num_decoder_layers: 6
    hidden_layer_multiplier: 3
5716.725859642029
```

m4_hourly

```
Number of finished trials: 10
Best trial:
  Value: 0.1140850377344126
  Params:
    context_length: 328
    max_epochs: 5
    batch_size: 192
    num_encoder_layers: 2
    num_decoder_layers: 14
    hidden_layer_multiplier: 1
4097.842650413513
```

m4_daily

```
Number of finished trials: 10
Best trial:
  Value: 0.02559540798778196
  Params:
    context_length: 38
    max_epochs: 9
    batch_size: 256
    num_encoder_layers: 6
    num_decoder_layers: 6
    hidden_layer_multiplier: 4
3348.466498374939
```

m4_weekly

Best trial:

Value: 0.06492910048930038

Params:

context_length: 13

max_epochs: 7

batch_size: 192

num_encoder_layers: 2

num_decoder_layers: 6

hidden_layer_multiplier: 2

1727.610532283783

m4_monthly

Number of finished trials: 10

Best trial:

Value: 0.12607170045251498

Params:

context_length: 30

max_epochs: 9

batch_size: 192

num_encoder_layers: 2

num_decoder_layers: 10

hidden_layer_multiplier: 2

8060.160531044006

m4_quarterly

Number of finished trials: 10

Best trial:

Value: 0.10359394933674385

Params:

context_length: 48

max_epochs: 5

batch_size: 256

num_encoder_layers: 2

num_decoder_layers: 14

hidden_layer_multiplier: 3

2708.975362062454

Solar-energy

Number of finished trials: 10

Best trial:

Value: 0.48845744440305744

Params:

context_length: 68

max_epochs: 9

batch_size: 192

num_encoder_layers: 2

num_decoder_layers: 2

hidden_layer_multiplier: 2

3872.9824953079224

Performer/favor

Electricity

```
Number of finished trials: 10
Best trial:
  Value: 0.2551138922807803
  Params:
    context_length: 40
    max_epochs: 7
    batch_size: 192
    num_encoder_layers: 6
    num_decoder_layers: 2
    hidden_layer_multiplier: 4
10278.403488874435
```

Traffic

```
Number of finished trials: 10
Best trial:
  Value: 0.42485853702755305
  Params:
    context_length: 68
    max_epochs: 9
    batch_size: 256
    num_encoder_layers: 6
    num_decoder_layers: 6
    hidden_layer_multiplier: 1
9109.396406173706
```

m4_weekly

```
Number of finished trials: 10
Best trial:
  Value: 0.07147500082979524
  Params:
    context_length: 41
    max_epochs: 7
    batch_size: 128
    num_encoder_layers: 2
    num_decoder_layers: 10
    hidden_layer_multiplier: 2
1496.7948081493378
```

m4_monthly

```
Number of finished trials: 10
Best trial:
  Value: 0.15239767931027823
  Params:
    context_length: 114
    max_epochs: 9
    batch_size: 128
    num_encoder_layers: 2
    num_decoder_layers: 14
    hidden_layer_multiplier: 1
7417.3822729587555
```

Solar-energy

```
Number of finished trials: 10
Best trial:
  Value: 0.9297590530033555
  Params:
    context_length: 92
    max_epochs: 9
    batch_size: 192
    num_encoder_layers: 14
    num_decoder_layers: 14
    hidden_layer_multiplier: 1
6613.200937271118
```

Nystorm
Electricity

```
Number of finished trials: 10
Best trial:
  Value: 0.24849096215741737
  Params:
    context_length: 64
    max_epochs: 7
    batch_size: 128
    num_encoder_layers: 6
    num_decoder_layers: 14
    hidden_layer_multiplier: 1
2795.4227793216705
```

Traffic

```
Number of finished trials: 10
Best trial:
  Value: 0.30209722906846115
  Params:
    context_length: 80
    max_epochs: 5
    batch_size: 128
    num_encoder_layers: 6
    num_decoder_layers: 2
    hidden_layer_multiplier: 1
3547.650723695755
```

m4_hourly

```
Number of finished trials: 10
Best trial:
  Value: 0.11483009701871007
  Params:
    context_length: 104
    max_epochs: 7
    batch_size: 256
    num_encoder_layers: 6
    num_decoder_layers: 14
    hidden_layer_multiplier: 2
1832.637520313263
```

m4_weekly

```
Number of finished trials: 10
Best trial:
  Value: 0.0612349078279979
  Params:
    context_length: 45
    max_epochs: 9
    batch_size: 192
    num_encoder_layers: 14
    num_decoder_layers: 6
    hidden_layer_multiplier: 3
1295.8307359218597
```

m4_monthly

```
Number of finished trials: 10
Best trial:
  Value: 0.12906809062393776
  Params:
    context_length: 26
    max_epochs: 7
    batch_size: 128
    num_encoder_layers: 2
    num_decoder_layers: 14
    hidden_layer_multiplier: 4
2856.7914345264435
```

m4_quarterly

```
Number of finished trials: 10
Best trial:
  Value: 0.10156908948740034
  Params:
    context_length: 8
    max_epochs: 5
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 2
    hidden_layer_multiplier: 1
1541.7068786621094
```

solar-energy

```
Number of finished trials: 10
Best trial:
  Value: 0.37640385817184563
  Params:
    context_length: 36
    max_epochs: 7
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 2
    hidden_layer_multiplier: 1
1820.5050325393677
```

Linformer
Traffic

```
Number of finished trials: 10
Best trial:
  Value: 0.22322828508992673
  Params:
    context_length: 52
    max_epochs: 3
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 2
    hidden_layer_multiplier: 2
3041.5646073818207
```

m4_daily


```
Number of finished trials: 10
Best trial:
  Value: 0.02557071322434234
  Params:
    context_length: 14
    max_epochs: 9
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 14
    hidden_layer_multiplier: 3
1929.938705921173
```

m4_weekly

```
Number of finished trials: 10
Best trial:
  Value: 0.06007206634027488
  Params:
    context_length: 61
    max_epochs: 3
    batch_size: 256
    num_encoder_layers: 2
    num_decoder_layers: 14
    hidden_layer_multiplier: 2
902.9806342124939
```

m4_quarterly

```
Number of finished trials: 10
Best trial:
  Value: 0.09494142410565977
  Params:
    context_length: 8
    max_epochs: 9
    batch_size: 256
    num_encoder_layers: 14
    num_decoder_layers: 6
    hidden_layer_multiplier: 3
1547.6929397583008
```

Solar-energy