

CS726 Programming Assignment – 4 Report

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Task 0: Environment Setup and Result Reproduction

Here is how the model was loaded:

```
model = EnergyRegressor(FEAT_DIM).to(DEVICE)
```

And here is how the trained weights were loaded:

```
model.load_state_dict(torch.load('../trained_model_weights.pth', map_location=DEVICE))
```

Here is the output generated when we run the script:

Using device: cuda

--- Model Architecture ---

```
EnergyRegressor(  
  (net): Sequential(  
    (0): Linear(in_features=784, out_features=4096, bias=True)  
    (1): ReLU(inplace=True)  
    (2): Linear(in_features=4096, out_features=2048, bias=True)  
    (3): ReLU(inplace=True)  
    (4): Linear(in_features=2048, out_features=1024, bias=True)  
    (5): ReLU(inplace=True)  
    (6): Linear(in_features=1024, out_features=512, bias=True)  
    (7): ReLU(inplace=True)  
    (8): Linear(in_features=512, out_features=256, bias=True)  
    (9): ReLU(inplace=True)  
    (10): Linear(in_features=256, out_features=128, bias=True)  
    (11): ReLU(inplace=True)  
    (12): Linear(in_features=128, out_features=64, bias=True)  
    (13): ReLU(inplace=True)  
    (14): Linear(in_features=64, out_features=32, bias=True)  
    (15): ReLU(inplace=True)  
    (16): Linear(in_features=32, out_features=16, bias=True)  
    (17): ReLU(inplace=True)  
    (18): Linear(in_features=16, out_features=8, bias=True)  
    (19): ReLU(inplace=True)  
    (20): Linear(in_features=8, out_features=4, bias=True)  
    (21): ReLU(inplace=True)
```

```
(22): Linear(in_features=4, out_features=2, bias=True)
(23): ReLU(inplace=True)
(24): Linear(in_features=2, out_features=1, bias=True)
)
)
-----

Loading dataset from ../A4_test_data.pt...
Dataset loaded in 0.17s. Shape: x=torch.Size([100000, 784]), energy=torch.Size([100000,
1])

--- Test Results ---
Loss: 288.1554
--- Script Finished ---
```

As shown in the output above, the model and dataset were loaded successfully. The model architecture is a feedforward neural network with 24 layers, and the dataset contains 100,000 samples. The loss value of 288.1554 indicates the performance of the model on the test dataset.

Task 1: MCMC Sampling Implementation