

```
In [1]: import wandb
        wandb.login(key="39ded67ba2685c0f85010b40d27298a712244e64")
```

wandb: Using wandb-core as the SDK backend. Please refer to <https://wandb.me/wandb-core> for more information.

wandb: WARNING If you're specifying your api key in code, ensure this code is not shared publicly.

wandb: WARNING Consider setting the WANDB_API_KEY environment variable, or running `wandb login` from the command line.

wandb: Appending key for api.wandb.ai to your netrc file: C:\Users\Preethi_netrc

wandb: Currently logged in as: mm21b051 (mm21b051-iitmaana) to <https://api.wandb.ai>. Use `wandb login --relogin` to force relogin

Out[1]: True

```
In [2]: wandb.init(project="DeepLearning1", name="GradientDescent")
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250312_231754-9no1yv01

Syncing run **GradientDescent** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1)

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/9no1yv01>

Out[2]: Display W&B run

```
In [26]: wandb.finish()
```

visualising dataset

```
In [24]: from keras.datasets import fashion_mnist
        import numpy as np
        import matplotlib.pyplot as plt

        (x_train, y_train), (x_test, y_test) = fashion_mnist.load_data()

        # Defining class names
        class_names = ['T-shirt/top', 'Trouser', 'Pullover', 'Dress', 'Coat',
                        'Sandal', 'Shirt', 'Sneaker', 'Bag', 'Ankle boot']

        sample_images = []
        sample_labels = []

        for class_id in range(10):
            index = np.where(y_train == class_id)[0][0] # Get the first occurrence of t
            sample_images.append(x_train[index])
            sample_labels.append(class_names[class_id])

        plt.figure(figsize=(10, 5))
        for i in range(10):
            plt.subplot(2, 5, i + 1)
            plt.imshow(sample_images[i], cmap='gray')
            plt.title(sample_labels[i])
            plt.axis('off')
```

```
plt.tight_layout()

wandb.init(project="DeepLearning1", name="question1 image")

# Save figure before logging
plt.savefig("dataset.png")
wandb.log({
    "dataset": wandb.Image("dataset.png") # Log saved image
})

# Show the plot
plt.show()

# Finish wandb run
wandb.finish()
```

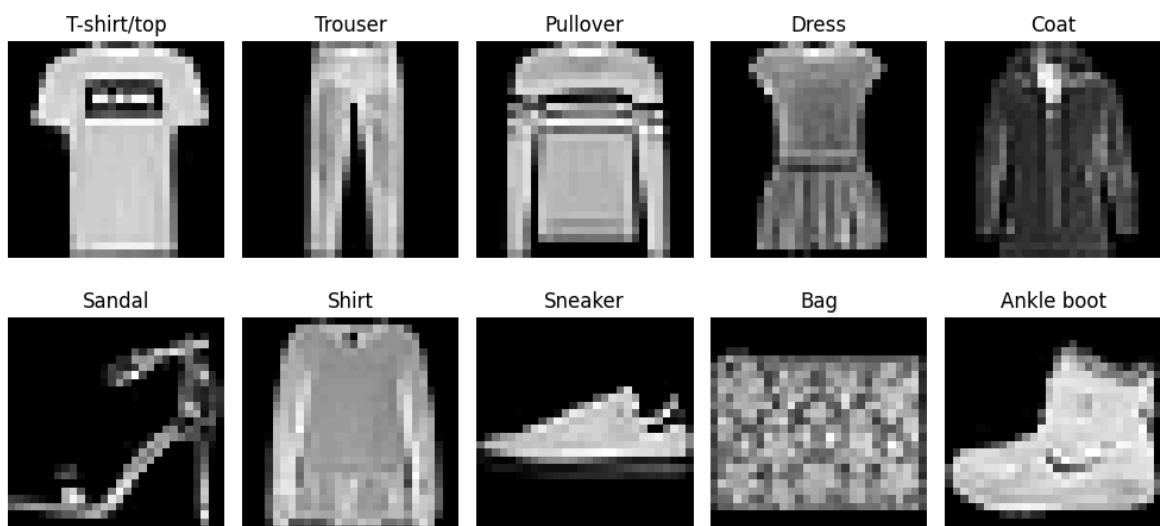
Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250317_203925-bhh5ub9l

Syncing run **question1 image** to [Weights & Biases \(docs\)](#)

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bhh5ub9l>



View run **question1 image** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bhh5ub9l>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 1 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250317_203925-bhh5ub9l\logs

Feed Forward

```
In [4]: import numpy as np
import pandas as pd
import wandb

x_train, x_test = x_train / 255.0, x_test / 255.0 # Normalize
x_train, x_test = x_train.reshape(x_train.shape[0], -1), x_test.reshape(x_test.s

# One-hot encoding labels
num_classes = 10
```

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y_train_onehot = np.eye(num_classes)[y_train]
y_test_onehot = np.eye(num_classes)[y_test]

# Neural Network Class
class NeuralNetwork:
    def __init__(self, input_size, hidden_layers, output_size):
        """
        Initialize the neural network with given architecture.
        :param input_size: Number of input features
        :param hidden_layers: List where each element is the number of neurons in each hidden layer
        :param output_size: Number of output classes
        """
        self.layers = [input_size] + hidden_layers + [output_size]
        self.weights = {}
        self.biases = {}

        # Initialize weights and biases
        for i in range(len(self.layers) - 1):
            self.weights[i] = np.random.randn(self.layers[i], self.layers[i+1])
            self.biases[i] = np.zeros((1, self.layers[i+1]))

    def relu(self, Z):
        return np.maximum(0, Z)

    def relu_derivative(self, Z):
        return (Z > 0).astype(float)

    def softmax(self, Z):
        expZ = np.exp(Z - np.max(Z, axis=1, keepdims=True))
        return expZ / np.sum(expZ, axis=1, keepdims=True)

    def forward(self, X):
        """
        Forward propagation.
        :param X: Input data
        :return: Activations for each layer
        """
        activations = {0: X}
        for i in range(len(self.layers) - 2):
            Z = np.dot(activations[i], self.weights[i]) + self.biases[i]
            activations[i + 1] = self.relu(Z)
        Z_out = np.dot(activations[len(self.layers) - 2], self.weights[len(self.layers) - 2])
        activations[len(self.layers) - 1] = self.softmax(Z_out)
        return activations

    def backward(self, X, Y, activations, learning_rate):
        """
        Backpropagation algorithm.
        :param X: Input data
        :param Y: True labels
        :param activations: Forward pass activations
        :param learning_rate: Step size for gradient descent
        """
        grads = {}
        m = X.shape[0]
        L = len(self.layers) - 1

        # Compute output layer gradient
        dZ = activations[L] - Y
        grads['dW' + str(L - 1)] = np.dot(activations[L - 1].T, dZ) / m

```

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grads['db' + str(L - 1)] = np.sum(dZ, axis=0, keepdims=True) / m

# Backpropagate through hidden layers
for i in range(L - 2, -1, -1):
    dZ = np.dot(dZ, self.weights[i + 1].T) * self.relu_derivative(activations[i])
    grads['dW' + str(i)] = np.dot(activations[i].T, dZ) / m
    grads['db' + str(i)] = np.sum(dZ, axis=0, keepdims=True) / m

# Update weights and biases
for i in range(L):
    self.weights[i] -= learning_rate * grads['dW' + str(i)]
    self.biases[i] -= learning_rate * grads['db' + str(i)]

def compute_loss(self, Y_true, Y_pred):
    """
    Compute cross-entropy loss.
    """
    m = Y_true.shape[0]
    return -np.sum(Y_true * np.log(Y_pred + 1e-8)) / m

def train(self, X, Y, epochs=50, batch_size=64, learning_rate=0.01):
    """
    Train the model using mini-batch gradient descent.
    """
    for epoch in range(epochs):
        indices = np.random.permutation(X.shape[0])
        X_shuffled, Y_shuffled = X[indices], Y[indices]

        for i in range(0, X.shape[0], batch_size):
            X_batch = X_shuffled[i:i + batch_size]
            Y_batch = Y_shuffled[i:i + batch_size]
            activations = self.forward(X_batch)
            self.backward(X_batch, Y_batch, activations, learning_rate)

        # # Log loss to wandb every 10 epochs
        # if epoch % 10 == 0:
        Y_pred = self.forward(X)[len(self.layers) - 1]
        loss = self.compute_loss(Y, Y_pred)
        wandb.log({"epoch": epoch, "loss": loss})
        print(f"Epoch {epoch}, Loss: {loss:.4f}")

def predict(self, X):
    """
    Predict class labels.
    """
    activations = self.forward(X)
    return np.argmax(activations[len(self.layers) - 1], axis=1)

# Create and train the network
nn = NeuralNetwork(input_size=784, hidden_layers=[128, 64], output_size=10)
nn.train(x_train, y_train_onehot, epochs=50, batch_size=64, learning_rate=0.01)

# Evaluation on test set
y_pred = nn.predict(x_test)
accuracy = np.mean(y_pred == y_test)
wandb.log({"Test Accuracy": accuracy}) # Log test accuracy
print(f"Test Accuracy: {accuracy:.4f}")

```

```
Epoch 0, Loss: 2.3002
Epoch 1, Loss: 2.0391
Epoch 2, Loss: 1.1643
Epoch 3, Loss: 0.9051
Epoch 4, Loss: 0.8116
Epoch 5, Loss: 0.7714
Epoch 6, Loss: 0.7226
Epoch 7, Loss: 0.6443
Epoch 8, Loss: 0.5907
Epoch 9, Loss: 0.5755
Epoch 10, Loss: 0.5573
Epoch 11, Loss: 0.5495
Epoch 12, Loss: 0.5255
Epoch 13, Loss: 0.5185
Epoch 14, Loss: 0.4896
Epoch 15, Loss: 0.4811
Epoch 16, Loss: 0.4775
Epoch 17, Loss: 0.4624
Epoch 18, Loss: 0.4525
Epoch 19, Loss: 0.4351
Epoch 20, Loss: 0.4274
Epoch 21, Loss: 0.4445
Epoch 22, Loss: 0.4350
Epoch 23, Loss: 0.4144
Epoch 24, Loss: 0.4244
Epoch 25, Loss: 0.3946
Epoch 26, Loss: 0.3981
Epoch 27, Loss: 0.3772
Epoch 28, Loss: 0.3920
Epoch 29, Loss: 0.3846
Epoch 30, Loss: 0.4330
Epoch 31, Loss: 0.3682
Epoch 32, Loss: 0.3620
Epoch 33, Loss: 0.3587
Epoch 34, Loss: 0.3481
Epoch 35, Loss: 0.3487
Epoch 36, Loss: 0.3715
Epoch 37, Loss: 0.3355
Epoch 38, Loss: 0.3353
Epoch 39, Loss: 0.3650
Epoch 40, Loss: 0.3439
Epoch 41, Loss: 0.3298
Epoch 42, Loss: 0.3268
Epoch 43, Loss: 0.3258
Epoch 44, Loss: 0.3126
Epoch 45, Loss: 0.3077
Epoch 46, Loss: 0.3117
Epoch 47, Loss: 0.3007
Epoch 48, Loss: 0.2992
Epoch 49, Loss: 0.2966
Test Accuracy: 0.8692
```

Different Optimizers

```
In [5]: import numpy as np
import wandb
from tensorflow.keras.datasets import fashion_mnist
```

```

(x_train, y_train), (x_test, y_test) = fashion_mnist.load_data()
x_train, x_test = x_train / 255.0, x_test / 255.0
x_train, x_test = x_train.reshape(x_train.shape[0], -1), x_test.reshape(x_test.s

num_classes = 10
y_train_onehot = np.eye(num_classes)[y_train]
y_test_onehot = np.eye(num_classes)[y_test]

class NeuralNetwork:
    def __init__(self, input_size, hidden_layers, output_size, optimizer="sgd",
        self.layers = [input_size] + hidden_layers + [output_size]
        self.weights = {}
        self.biases = {}

        # initializing weights and biases
        for i in range(len(self.layers) - 1):
            self.weights[i] = np.random.randn(self.layers[i], self.layers[i+1])
            self.biases[i] = np.zeros((1, self.layers[i+1]))

        # Storing gradients and optimization parameters
        self.velocities = {i: np.zeros_like(self.weights[i]) for i in self.weigh
        self.squared_gradients = {i: np.zeros_like(self.weights[i]) for i in sel
        self.m_t = {i: np.zeros_like(self.weights[i]) for i in self.weights}
        self.v_t = {i: np.zeros_like(self.weights[i]) for i in self.weights}

        self.optimizer = optimizer
        self.learning_rate = learning_rate
        self.beta1 = 0.9
        self.beta2 = 0.999
        self.epsilon = 1e-8

    def relu(self, Z):
        return np.maximum(0, Z)

    def relu_derivative(self, Z):
        return (Z > 0).astype(float)

    def softmax(self, Z):
        expZ = np.exp(Z - np.max(Z, axis=1, keepdims=True))
        return expZ / np.sum(expZ, axis=1, keepdims=True)

    def forward(self, X):
        activations = {0: X}
        for i in range(len(self.layers) - 2):
            Z = np.dot(activations[i], self.weights[i]) + self.biases[i]
            activations[i + 1] = self.relu(Z)
        Z_out = np.dot(activations[len(self.layers) - 2], self.weights[len(self.
        activations[len(self.layers) - 1] = self.softmax(Z_out)
        return activations

    def backward(self, activations, Y_true):
        grads = {}
        L = len(self.layers) - 1
        m = Y_true.shape[0]

        # gradient for output layer
        dZ = activations[L] - Y_true
        grads['dW' + str(L - 1)] = np.dot(activations[L - 1].T, dZ) / m
        grads['db' + str(L - 1)] = np.sum(dZ, axis=0, keepdims=True) / m

```

```

# Backpropagate through hidden layers
for i in range(L - 2, -1, -1):
    dZ = np.dot(dZ, self.weights[i + 1].T) * self.relu_derivative(activations[i])
    grads['dW' + str(i)] = np.dot(activations[i].T, dZ) / m
    grads['db' + str(i)] = np.sum(dZ, axis=0, keepdims=True) / m

return grads

def update_weights(self, grads, t):
    for i in self.weights:
        if self.optimizer == "sgd":
            self.weights[i] -= self.learning_rate * grads['dW' + str(i)]
            self.biases[i] -= self.learning_rate * grads['db' + str(i)]

        elif self.optimizer == "momentum":
            self.velocities[i] = self.beta1 * self.velocities[i] - self.learning_rate * grads['dW' + str(i)]
            self.weights[i] += self.velocities[i]
            self.biases[i] -= self.learning_rate * grads['db' + str(i)]

        elif self.optimizer == "nesterov":
            prev_velocity = self.velocities[i]
            self.velocities[i] = self.beta1 * self.velocities[i] - self.learning_rate * grads['dW' + str(i)]
            self.weights[i] += -self.beta1 * prev_velocity + (1 + self.beta1) * self.learning_rate * grads['dW' + str(i)]
            self.biases[i] -= self.learning_rate * grads['db' + str(i)]

        elif self.optimizer == "rmsprop":
            self.squared_gradients[i] = self.beta2 * self.squared_gradients[i] + (1 - self.beta2) * grads['dW' + str(i)] ** 2
            self.weights[i] -= self.learning_rate * grads['dW' + str(i)] / (self.squared_gradients[i] ** 0.5)
            self.biases[i] -= self.learning_rate * grads['db' + str(i)]

        elif self.optimizer == "adam":
            self.m_t[i] = self.beta1 * self.m_t[i] + (1 - self.beta1) * grads['dW' + str(i)]
            self.v_t[i] = self.beta2 * self.v_t[i] + (1 - self.beta2) * grads['dW' + str(i)] ** 2
            m_hat = self.m_t[i] / (1 - self.beta1 ** t)
            v_hat = self.v_t[i] / (1 - self.beta2 ** t)
            self.weights[i] -= self.learning_rate * m_hat / (np.sqrt(v_hat) + 1e-8)
            self.biases[i] -= self.learning_rate * grads['db' + str(i)]

        elif self.optimizer == "nadam":
            m_hat = self.beta1 * self.m_t[i] + (1 - self.beta1) * grads['dW' + str(i)]
            v_hat = self.beta2 * self.v_t[i] + (1 - self.beta2) * grads['dW' + str(i)] ** 2
            self.weights[i] -= self.learning_rate * (self.beta1 * m_hat + (1 - self.beta1) * v_hat) / (np.sqrt(v_hat) + 1e-8)
            self.biases[i] -= self.learning_rate * grads['db' + str(i)]

def compute_loss(self, Y_true, Y_pred):
    m = Y_true.shape[0]
    return -np.sum(Y_true * np.log(Y_pred + 1e-8)) / m

def train(self, X, Y, epochs=50, batch_size=64):
    for epoch in range(epochs):
        indices = np.random.permutation(X.shape[0])
        X_shuffled, Y_shuffled = X[indices], Y[indices]

        for i in range(0, X.shape[0], batch_size):
            X_batch = X_shuffled[i:i + batch_size]
            Y_batch = Y_shuffled[i:i + batch_size]
            activations = self.forward(X_batch)
            grads = self.backward(activations, Y_batch)
            self.update_weights(grads, epoch + 1)

```

```

        loss = self.compute_loss(Y, self.forward(X)[len(self.layers) - 1])
        wandb.log({"epoch": epoch, "loss": loss})
        print(f"Epoch {epoch}, Loss: {loss:.4f}")

optimizers = ["sgd", "momentum", "nesterov", "rmsprop", "adam", "nadam"]

for opt in optimizers:
    wandb.init(project="DeepLearning1", name=f"Optimizer-{opt}", reinit=True)
    print(f"\nTraining with optimizer: {opt}")
    nn = NeuralNetwork(input_size=784, hidden_layers=[128, 64], output_size=10,
                        nn.train(x_train, y_train_onehot, epochs=50, batch_size=64)

```

Run history:



Run summary:

Test Accuracy 0.8692

epoch 49

loss 0.29658

View run **GradientDescent** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/9no1yvol>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250312_231754-9no1yvol\logs

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-

20250313_225040-jje39kd1

Syncing run **Optimizer-sgd** to Weights & Biases (docs)

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/jje39kd1>

Training with optimizer: sgd

Epoch 0, Loss: 2.3025
Epoch 1, Loss: 2.3023
Epoch 2, Loss: 2.3021
Epoch 3, Loss: 2.3020
Epoch 4, Loss: 2.3017
Epoch 5, Loss: 2.3015
Epoch 6, Loss: 2.3011
Epoch 7, Loss: 2.3006
Epoch 8, Loss: 2.2999
Epoch 9, Loss: 2.2989
Epoch 10, Loss: 2.2973
Epoch 11, Loss: 2.2946
Epoch 12, Loss: 2.2897
Epoch 13, Loss: 2.2794
Epoch 14, Loss: 2.2563
Epoch 15, Loss: 2.2069
Epoch 16, Loss: 2.1337
Epoch 17, Loss: 2.0503
Epoch 18, Loss: 1.9270
Epoch 19, Loss: 1.7541
Epoch 20, Loss: 1.6087
Epoch 21, Loss: 1.4845
Epoch 22, Loss: 1.3833
Epoch 23, Loss: 1.3083
Epoch 24, Loss: 1.2518
Epoch 25, Loss: 1.2068
Epoch 26, Loss: 1.1697
Epoch 27, Loss: 1.1370
Epoch 28, Loss: 1.1084
Epoch 29, Loss: 1.0806
Epoch 30, Loss: 1.0533
Epoch 31, Loss: 1.0292
Epoch 32, Loss: 0.9996
Epoch 33, Loss: 0.9716
Epoch 34, Loss: 0.9445
Epoch 35, Loss: 0.9211
Epoch 36, Loss: 0.9003
Epoch 37, Loss: 0.8853
Epoch 38, Loss: 0.8692
Epoch 39, Loss: 0.8580
Epoch 40, Loss: 0.8503
Epoch 41, Loss: 0.8401
Epoch 42, Loss: 0.8306
Epoch 43, Loss: 0.8248
Epoch 44, Loss: 0.8216
Epoch 45, Loss: 0.8093
Epoch 46, Loss: 0.8018
Epoch 47, Loss: 0.7960
Epoch 48, Loss: 0.7901
Epoch 49, Loss: 0.7848

Run history:



Run summary:

epoch	49
loss	0.78482

View run **Optimizer-sgd** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/jje39kd1>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250313_225040-jje39kd1\logs

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250313_225515-wjx3d805

Syncing run **Optimizer-momentum** to [Weights & Biases \(docs\)](#)

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/wjx3d805>

Training with optimizer: momentum

Epoch 0, Loss: 2.2974
Epoch 1, Loss: 1.9331
Epoch 2, Loss: 1.0233
Epoch 3, Loss: 0.8891
Epoch 4, Loss: 0.8221
Epoch 5, Loss: 0.7885
Epoch 6, Loss: 0.6880
Epoch 7, Loss: 0.6286
Epoch 8, Loss: 0.5972
Epoch 9, Loss: 0.5693
Epoch 10, Loss: 0.5684
Epoch 11, Loss: 0.5331
Epoch 12, Loss: 0.5140
Epoch 13, Loss: 0.4995
Epoch 14, Loss: 0.4892
Epoch 15, Loss: 0.4838
Epoch 16, Loss: 0.4667
Epoch 17, Loss: 0.4774
Epoch 18, Loss: 0.4537
Epoch 19, Loss: 0.4426
Epoch 20, Loss: 0.4347
Epoch 21, Loss: 0.4338
Epoch 22, Loss: 0.4201
Epoch 23, Loss: 0.4098
Epoch 24, Loss: 0.4091
Epoch 25, Loss: 0.4001
Epoch 26, Loss: 0.3892
Epoch 27, Loss: 0.4027
Epoch 28, Loss: 0.3781
Epoch 29, Loss: 0.3745
Epoch 30, Loss: 0.3754
Epoch 31, Loss: 0.3650
Epoch 32, Loss: 0.3632
Epoch 33, Loss: 0.3708
Epoch 34, Loss: 0.3562
Epoch 35, Loss: 0.3465
Epoch 36, Loss: 0.3441
Epoch 37, Loss: 0.3367
Epoch 38, Loss: 0.3336
Epoch 39, Loss: 0.3367
Epoch 40, Loss: 0.3221
Epoch 41, Loss: 0.3243
Epoch 42, Loss: 0.3185
Epoch 43, Loss: 0.3125
Epoch 44, Loss: 0.3142
Epoch 45, Loss: 0.3119
Epoch 46, Loss: 0.3086
Epoch 47, Loss: 0.3034
Epoch 48, Loss: 0.3003
Epoch 49, Loss: 0.3045

Run history:



Run summary:

epoch	49
loss	0.30448

View run **Optimizer-momentum** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/wjx3d805>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250313_225515-wjx3d805\logs

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250313_230043-kjx82ggj

Syncing run **Optimizer-nesterov** to [Weights & Biases \(docs\)](#)

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/kjx82ggj>

Training with optimizer: nesterov

Epoch 0, Loss: 2.3001
Epoch 1, Loss: 2.0639
Epoch 2, Loss: 1.1614
Epoch 3, Loss: 0.9190
Epoch 4, Loss: 0.8584
Epoch 5, Loss: 0.8231
Epoch 6, Loss: 0.7985
Epoch 7, Loss: 0.7157
Epoch 8, Loss: 0.6414
Epoch 9, Loss: 0.5971
Epoch 10, Loss: 0.5856
Epoch 11, Loss: 0.5547
Epoch 12, Loss: 0.5378
Epoch 13, Loss: 0.5217
Epoch 14, Loss: 0.5124
Epoch 15, Loss: 0.4973
Epoch 16, Loss: 0.4877
Epoch 17, Loss: 0.4857
Epoch 18, Loss: 0.4744
Epoch 19, Loss: 0.4596
Epoch 20, Loss: 0.4680
Epoch 21, Loss: 0.4408
Epoch 22, Loss: 0.4362
Epoch 23, Loss: 0.4295
Epoch 24, Loss: 0.4283
Epoch 25, Loss: 0.4244
Epoch 26, Loss: 0.4066
Epoch 27, Loss: 0.4026
Epoch 28, Loss: 0.3958
Epoch 29, Loss: 0.4073
Epoch 30, Loss: 0.3950
Epoch 31, Loss: 0.3885
Epoch 32, Loss: 0.3765
Epoch 33, Loss: 0.3891
Epoch 34, Loss: 0.3742
Epoch 35, Loss: 0.3602
Epoch 36, Loss: 0.3560
Epoch 37, Loss: 0.3510
Epoch 38, Loss: 0.3535
Epoch 39, Loss: 0.3453
Epoch 40, Loss: 0.3489
Epoch 41, Loss: 0.3455
Epoch 42, Loss: 0.3393
Epoch 43, Loss: 0.3317
Epoch 44, Loss: 0.3256
Epoch 45, Loss: 0.3344
Epoch 46, Loss: 0.3217
Epoch 47, Loss: 0.3182
Epoch 48, Loss: 0.3278
Epoch 49, Loss: 0.3180

Run history:



Run summary:

epoch	49
loss	0.31797

View run **Optimizer-nesterov** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/kjx82ggj>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250313_230043-kjx82ggj\logs

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250313_230646-ors0ru41

Syncing run **Optimizer-rmsprop** to [Weights & Biases \(docs\)](#)

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ors0ru41>

Training with optimizer: rmsprop

Epoch 0, Loss: 0.4247
Epoch 1, Loss: 0.3711
Epoch 2, Loss: 0.3337
Epoch 3, Loss: 0.3381
Epoch 4, Loss: 0.2999
Epoch 5, Loss: 0.3061
Epoch 6, Loss: 0.3423
Epoch 7, Loss: 0.3096
Epoch 8, Loss: 0.2634
Epoch 9, Loss: 0.2594
Epoch 10, Loss: 0.2409
Epoch 11, Loss: 0.2343
Epoch 12, Loss: 0.2385
Epoch 13, Loss: 0.2291
Epoch 14, Loss: 0.2192
Epoch 15, Loss: 0.2164
Epoch 16, Loss: 0.2157
Epoch 17, Loss: 0.2122
Epoch 18, Loss: 0.2047
Epoch 19, Loss: 0.1968
Epoch 20, Loss: 0.1973
Epoch 21, Loss: 0.1912
Epoch 22, Loss: 0.1834
Epoch 23, Loss: 0.1937
Epoch 24, Loss: 0.2049
Epoch 25, Loss: 0.1985
Epoch 26, Loss: 0.1684
Epoch 27, Loss: 0.1704
Epoch 28, Loss: 0.1923
Epoch 29, Loss: 0.1644
Epoch 30, Loss: 0.2044
Epoch 31, Loss: 0.1951
Epoch 32, Loss: 0.1663
Epoch 33, Loss: 0.1488
Epoch 34, Loss: 0.1745
Epoch 35, Loss: 0.1502
Epoch 36, Loss: 0.1606
Epoch 37, Loss: 0.1552
Epoch 38, Loss: 0.1537
Epoch 39, Loss: 0.1489
Epoch 40, Loss: 0.1356
Epoch 41, Loss: 0.1429
Epoch 42, Loss: 0.1533
Epoch 43, Loss: 0.1241
Epoch 44, Loss: 0.1334
Epoch 45, Loss: 0.1331
Epoch 46, Loss: 0.1364
Epoch 47, Loss: 0.1254
Epoch 48, Loss: 0.1650
Epoch 49, Loss: 0.1244

Run history:



Run summary:

epoch	49
loss	0.1244

View run **Optimizer-rmsprop** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ors0ru41>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250313_230646-ors0ru41\logs

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250313_231416-p1ym47wy

Syncing run **Optimizer-adam** to [Weights & Biases \(docs\)](#)

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/p1ym47wy>

Training with optimizer: adam

Epoch 0, Loss: 0.5467
Epoch 1, Loss: 0.4955
Epoch 2, Loss: 0.4581
Epoch 3, Loss: 0.4373
Epoch 4, Loss: 0.4265
Epoch 5, Loss: 0.4088
Epoch 6, Loss: 0.4000
Epoch 7, Loss: 0.3896
Epoch 8, Loss: 0.3954
Epoch 9, Loss: 0.3760
Epoch 10, Loss: 0.3703
Epoch 11, Loss: 0.3615
Epoch 12, Loss: 0.3560
Epoch 13, Loss: 0.3502
Epoch 14, Loss: 0.3435
Epoch 15, Loss: 0.3395
Epoch 16, Loss: 0.3372
Epoch 17, Loss: 0.3356
Epoch 18, Loss: 0.3264
Epoch 19, Loss: 0.3274
Epoch 20, Loss: 0.3197
Epoch 21, Loss: 0.3188
Epoch 22, Loss: 0.3113
Epoch 23, Loss: 0.3087
Epoch 24, Loss: 0.3040
Epoch 25, Loss: 0.3003
Epoch 26, Loss: 0.2963
Epoch 27, Loss: 0.2926
Epoch 28, Loss: 0.2994
Epoch 29, Loss: 0.2886
Epoch 30, Loss: 0.2851
Epoch 31, Loss: 0.2803
Epoch 32, Loss: 0.2868
Epoch 33, Loss: 0.2778
Epoch 34, Loss: 0.2702
Epoch 35, Loss: 0.2679
Epoch 36, Loss: 0.2717
Epoch 37, Loss: 0.2727
Epoch 38, Loss: 0.2608
Epoch 39, Loss: 0.2729
Epoch 40, Loss: 0.2636
Epoch 41, Loss: 0.2585
Epoch 42, Loss: 0.2553
Epoch 43, Loss: 0.2488
Epoch 44, Loss: 0.2485
Epoch 45, Loss: 0.2416
Epoch 46, Loss: 0.2459
Epoch 47, Loss: 0.2383
Epoch 48, Loss: 0.2383
Epoch 49, Loss: 0.2315

Run history:



Run summary:

epoch	49
loss	0.23149

View run **Optimizer-adam** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/plym47wy>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250313_231416-plym47wy\logs

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250313_233002-avvhujgh

Syncing run **Optimizer-nadam** to [Weights & Biases \(docs\)](#)

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/avvhujgh>

Training with optimizer: nadam

Epoch 0, Loss: 0.5965
Epoch 1, Loss: 0.5201
Epoch 2, Loss: 0.5339
Epoch 3, Loss: 0.6372
Epoch 4, Loss: 0.6763
Epoch 5, Loss: 0.6668
Epoch 6, Loss: 0.7095
Epoch 7, Loss: 0.8105
Epoch 8, Loss: 0.8313
Epoch 9, Loss: 0.7821
Epoch 10, Loss: 0.8281
Epoch 11, Loss: 0.8458
Epoch 12, Loss: 0.9268
Epoch 13, Loss: 0.9297
Epoch 14, Loss: 1.1763
Epoch 15, Loss: 1.1860
Epoch 16, Loss: 0.9441
Epoch 17, Loss: 1.0165
Epoch 18, Loss: 0.9367
Epoch 19, Loss: 0.9160
Epoch 20, Loss: 1.0906
Epoch 21, Loss: 1.1326
Epoch 22, Loss: 1.2764
Epoch 23, Loss: 1.0408
Epoch 24, Loss: 1.0265
Epoch 25, Loss: 1.1792
Epoch 26, Loss: 1.0270
Epoch 27, Loss: 1.0534
Epoch 28, Loss: 1.2105
Epoch 29, Loss: 1.5464
Epoch 30, Loss: 1.3060
Epoch 31, Loss: 1.8762
Epoch 32, Loss: 1.4756
Epoch 33, Loss: 1.3319
Epoch 34, Loss: 1.3216
Epoch 35, Loss: 1.1289
Epoch 36, Loss: 2.1217
Epoch 37, Loss: 2.8746
Epoch 38, Loss: 4.1611
Epoch 39, Loss: 3.4812
Epoch 40, Loss: 4.0734
Epoch 41, Loss: 3.0471
Epoch 42, Loss: 3.6575
Epoch 43, Loss: 5.5348
Epoch 44, Loss: 4.6342
Epoch 45, Loss: 3.8639
Epoch 46, Loss: 3.7154
Epoch 47, Loss: 6.8346
Epoch 48, Loss: 3.3455
Epoch 49, Loss: 4.8285

**Sweep with different parameters,using
bayesian optmization to eliminate poor
models**

```
In [6]: import wandb
from wandb.integration.keras import WandbCallback
from tensorflow.keras.datasets import fashion_mnist
import numpy as np

# Load the dataset
(x_train, y_train), (x_test, y_test) = fashion_mnist.load_data()
x_train, x_test = x_train / 255.0, x_test / 255.0 # Normalize to [0,1]
x_train, x_test = x_train.reshape(x_train.shape[0], -1), x_test.reshape(x_test.s

# One-hot encode labels
num_classes = 10
y_train_onehot = np.eye(num_classes)[y_train]
y_test_onehot = np.eye(num_classes)[y_test]

# Split into training (90%) and validation (10%)
val_size = int(0.1 * x_train.shape[0])
x_val, y_val_onehot = x_train[:val_size], y_train_onehot[:val_size]
x_train, y_train_onehot = x_train[val_size:], y_train_onehot[val_size:]

# Define the sweep configuration
sweep_config = {
    "method": "bayes", # Bayesian Optimization
    "metric": {"name": "val_loss", "goal": "minimize"},
    "parameters": {
        "epochs": {"values": [5, 10]},
        "hidden_layers": {"values": [3, 4, 5]},
        "hidden_size": {"values": [32, 64, 128]},
        "weight_decay": {"values": [0, 0.0005, 0.5]},
        "learning_rate": {"values": [1e-3, 1e-4]},
        "optimizer": {"values": ["sgd", "momentum", "nesterov", "rmsprop", "adam"]},
        "batch_size": {"values": [16, 32, 64]},
        "weight_init": {"values": ["random", "xavier"]},
        "activation": {"values": ["sigmoid", "tanh", "relu"]}
    }
}

# Initialize the sweep
sweep_id = wandb.sweep(sweep_config, project="DeepLearning1")
```

Create sweep with ID: qc8hcwnw

Sweep URL: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw-qc8hcwnw>

Sweep URL: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

```
In [ ]: import numpy as np
import wandb

def initialize_weights(shape, method):
    """Initialize weights using Xavier or small random values."""
    if method == "xavier":
        return np.random.randn(*shape) * np.sqrt(1 / shape[0])
    else:
        return np.random.randn(*shape) * 0.01

class NeuralNetwork:
    def __init__(self, config):
        input_size = 784 # MNIST images are 28x28
        output_size = 10 # 10 classes (digits 0-9)
        self.layers = [input_size] + [config.hidden_size] * config.hidden_layers
```

```

self.activation_func = config.activation
self.optimizer = config.optimizer
self.learning_rate = config.learning_rate
self.weight_decay = config.weight_decay
self.batch_size = config.batch_size
self.epochs = config.epochs
self.beta1 = 0.5
self.beta2 = 0.5
self.momentum = 0.5
self.epsilon = 0.000001
# Initialize weights and biases
self.weights = {}
self.biases = {}
for i in range(len(self.layers) - 1):
    self.weights[i] = initialize_weights((self.layers[i], self.layers[i+1]))
    self.biases[i] = np.zeros((1, self.layers[i+1]))

self.velocities = {i: np.zeros_like(self.weights[i]) for i in self.weights}
self.squared_gradients = {i: np.zeros_like(self.weights[i]) for i in self.weights}
self.m_t = {i: np.zeros_like(self.weights[i]) for i in self.weights}
self.v_t = {i: np.zeros_like(self.weights[i]) for i in self.weights}

def activation(self, Z):
    """Applies activation function."""
    if self.activation_func == "relu":
        return np.maximum(0, Z)
    elif self.activation_func == "sigmoid":
        return 1 / (1 + np.exp(-Z))
    elif self.activation_func == "tanh":
        return np.tanh(Z)

def activation_derivative(self, Z):
    """Computes derivative of activation function based on pre-activation Z."""
    if self.activation_func == "relu":
        return (Z > 0).astype(float) # Derivative of ReLU is 1 for Z > 0, 0 otherwise
    elif self.activation_func == "sigmoid":
        A = 1 / (1 + np.exp(-Z)) # Compute sigmoid(Z)
        return A * (1 - A) # Correct derivative
    elif self.activation_func == "tanh":
        A = np.tanh(Z) # Compute tanh(Z)
        return 1 - A**2 # Correct derivative

def softmax(self, Z):
    """Numerically stable softmax function."""
    Z -= np.max(Z, axis=1, keepdims=True) # Prevent overflow
    exp_Z = np.exp(Z)
    return exp_Z / np.sum(exp_Z, axis=1, keepdims=True)

def forward(self, X):
    """Performs forward propagation."""
    activations = {0: X}
    pre_activations = {} # Store pre-activation values (Z)

    for i in range(len(self.layers) - 2):
        Z = np.dot(activations[i], self.weights[i]) + self.biases[i]
        pre_activations[i + 1] = Z # Save Z before activation
        activations[i + 1] = self.activation(Z)

```

```

# Output layer with softmax
Z_out = np.dot(activations[len(self.layers) - 2], self.weights[len(self.
pre_activations[len(self.layers) - 1] = Z_out # Save final layer pre-ac
activations[len(self.layers) - 1] = self.softmax(Z_out)

return activations, pre_activations

def backward(self, activations, pre_activations, Y_true):
    grads = {}
    L = len(self.layers) - 1
    m = Y_true.shape[0]

    # Compute gradient for output layer
    dZ = activations[L] - Y_true
    grads['dW' + str(L - 1)] = np.dot(activations[L - 1].T, dZ) / m
    grads['db' + str(L - 1)] = np.sum(dZ, axis=0, keepdims=True) / m

    # Backpropagate through hidden layers
    for i in range(L - 2, -1, -1):
        dA = np.dot(dZ, self.weights[i + 1].T)
        dZ = dA * self.activation_derivative(pre_activations[i + 1]) # Corr
        grads['dW' + str(i)] = np.dot(activations[i].T, dZ) / m
        grads['db' + str(i)] = np.sum(dZ, axis=0, keepdims=True) / m

    return grads

def update_weights(self, grads, t):
    for i in self.weights:
        before_update = np.linalg.norm(self.weights[i]) # Compute norm befo

    if self.optimizer == "sgd":
        self.weights[i] -= self.learning_rate * grads['dW' + str(i)]
        self.biases[i] -= self.learning_rate * grads['db' + str(i)]

    elif self.optimizer == "momentum":
        self.velocities[i] = self.beta1 * self.velocities[i] - self.lear
        self.weights[i] += self.velocities[i]
        self.biases[i] -= self.learning_rate * grads['db' + str(i)]

    elif self.optimizer == "nesterov":
        prev_velocity = self.velocities[i]
        self.velocities[i] = self.beta1 * self.velocities[i] - self.lear
        self.weights[i] += -self.beta1 * prev_velocity + (1 + self.beta1
        self.biases[i] -= self.learning_rate * grads['db' + str(i)]

    elif self.optimizer == "rmsprop":
        self.squared_gradients[i] = self.beta2 * self.squared_gradients[
        self.weights[i] -= self.learning_rate * grads['dW' + str(i)] / (
        self.biases[i] -= self.learning_rate * grads['db' + str(i)]

    elif self.optimizer == "adam":
        self.m_t[i] = self.beta1 * self.m_t[i] + (1 - self.beta1) * grad
        self.v_t[i] = self.beta2 * self.v_t[i] + (1 - self.beta2) * (gra
        m_hat = self.m_t[i] / (1 - self.beta1 ** t)
        v_hat = self.v_t[i] / (1 - self.beta2 ** t)
        self.weights[i] -= self.learning_rate * m_hat / (np.sqrt(v_hat)
        self.biases[i] -= self.learning_rate * grads['db' + str(i)]

    elif self.optimizer == "nadam":

```

```

        m_hat = self.beta1 * self.m_t[i] + (1 - self.beta1) * grads['dW']
        v_hat = self.beta2 * self.v_t[i] + (1 - self.beta2) * (grads['dW']
        self.weights[i] -= self.learning_rate * (self.beta1 * m_hat + (1
        self.biases[i] -= self.learning_rate * grads['db' + str(i)])

def compute_loss(self, Y_true, Y_pred):
    """Computes categorical cross-entropy loss."""
    return -np.sum(Y_true * np.log(Y_pred + 1e-8)) / Y_true.shape[0] # Avoi

def compute_accuracy(self, Y_true, Y_pred):
    """Computes accuracy given true labels and predicted probabilities."""
    Y_pred_labels = np.argmax(Y_pred, axis=1)
    Y_true_labels = np.argmax(Y_true, axis=1)
    return np.mean(Y_pred_labels == Y_true_labels)

def train(self):
    """Train the neural network and log metrics using wandb."""
    for epoch in range(self.epochs):
        # Forward pass
        activations, pre_activations = self.forward(x_train)
        train_loss = self.compute_loss(y_train_onehot, activations[len(self.
        train_accuracy = self.compute_accuracy(y_train_onehot, activations[l

        # Backward pass & update
        grads = self.backward(activations, pre_activations, y_train_onehot)
        self.update_weights(grads, epoch + 1)

        # Validation metrics
        val_activations, _ = self.forward(x_val)
        val_loss = self.compute_loss(y_val_onehot, val_activations[len(self.
        val_accuracy = self.compute_accuracy(y_val_onehot, val_activations[l

        # Log metrics
        wandb.log({
            "epoch": epoch,
            "training_loss": train_loss,
            "training_accuracy": train_accuracy,
            "val_loss": val_loss,
            "val_accuracy": val_accuracy
        })

        # Print progress
        print(f"Epoch {epoch+1}/{self.epochs} | "
              f"Train Loss: {train_loss:.4f}, Train Acc: {train_accuracy:.4f}
              f"Val Loss: {val_loss:.4f}, Val Acc: {val_accuracy:.4f}")

```

```

In [8]: def sweep_train():
        with wandb.init() as run:
            config = wandb.config
            # Create a meaningful name for the sweep
            run.name = f"h1_{config.hidden_layers}_bs_{config.batch_size}_ac_{config
            model = NeuralNetwork(config)
            model.train()

        wandb.agent(sweep_id, function=sweep_train, count=100)

```

```
wandb: Agent Starting Run: bpl6w530 with config:
wandb:   activation: sigmoid
wandb:   batch_size: 16
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 32
wandb:   learning_rate: 0.001
wandb:   optimizer: momentum
wandb:   weight_decay: 0.5
wandb:   weight_init: random
wandb: Currently logged in as: mm21b051 (mm21b051-iitmaana) to https://api.wandb.ai. Use `wandb login --relogin` to force relogin
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_174722-bpl6w530

Syncing run **likely-sweep-1** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bpl6w530>

Epoch 1/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

Epoch 2/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

Epoch 3/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

Epoch 4/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

Epoch 5/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

Epoch 6/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

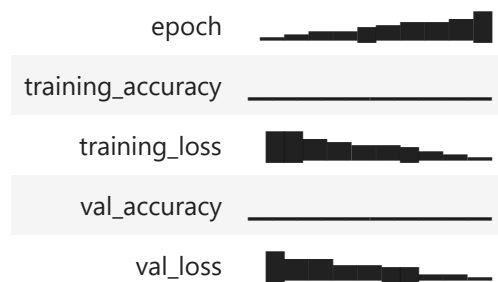
Epoch 7/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

Epoch 8/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

Epoch 9/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

Epoch 10/10 | Train Loss: 2.3027, Train Acc: 0.1001 | Val Loss: 2.3027, Val Acc: 0.0990

Run history:



Run summary:

epoch	9
training_accuracy	0.10011
training_loss	2.30271
val_accuracy	0.099
val_loss	2.30267

View run **hl_3_bs_16_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bpl6w530>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_174722-bpl6w530\logs`

```
wandb: Agent Starting Run: g9ovokzu with config:
wandb: activation: relu
wandb: batch_size: 16
wandb: epochs: 5
wandb: hidden_layers: 3
wandb: hidden_size: 32
wandb: learning_rate: 0.0001
wandb: optimizer: nesterov
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_174733-g9ovokzu`

Syncing run **classic-sweep-2** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

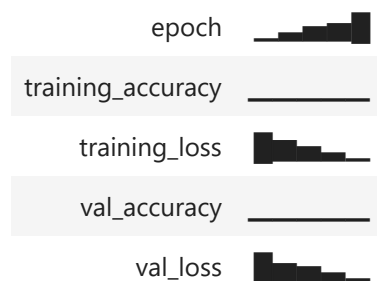
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/g9ovokzu>

```
Epoch 1/5 | Train Loss: 2.3345, Train Acc: 0.0969 | Val Loss: 2.3350, Val Acc: 0.0953
Epoch 2/5 | Train Loss: 2.3344, Train Acc: 0.0969 | Val Loss: 2.3350, Val Acc: 0.0953
Epoch 3/5 | Train Loss: 2.3344, Train Acc: 0.0969 | Val Loss: 2.3349, Val Acc: 0.0953
Epoch 4/5 | Train Loss: 2.3343, Train Acc: 0.0969 | Val Loss: 2.3349, Val Acc: 0.0953
Epoch 5/5 | Train Loss: 2.3343, Train Acc: 0.0969 | Val Loss: 2.3348, Val Acc: 0.0953
```

Run history:



Run summary:

epoch	4
training_accuracy	0.09693
training_loss	2.33425
val_accuracy	0.09533
val_loss	2.33481

View run **hl_3_bs_16_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/g9ovokzu>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_174733-g9ovokzu\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: vovxnie6 with config:  
wandb:   activation: sigmoid  
wandb:   batch_size: 16  
wandb:   epochs: 5  
wandb:   hidden_layers: 3  
wandb:   hidden_size: 128  
wandb:   learning_rate: 0.001  
wandb:   optimizer: adam  
wandb:   weight_decay: 0.5  
wandb:   weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_174748-vovxnie6

Syncing run **efficient-sweep-3** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

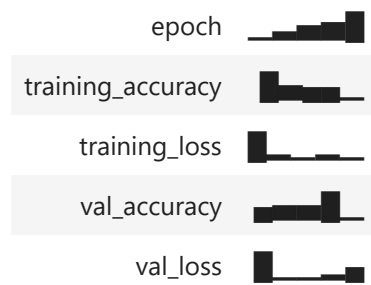
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/vovxnie6>

```
Epoch 1/5 | Train Loss: 2.3051, Train Acc: 0.1007 | Val Loss: 2.3040, Val Acc: 0.0983  
Epoch 2/5 | Train Loss: 2.3031, Train Acc: 0.1002 | Val Loss: 2.3025, Val Acc: 0.1013  
Epoch 3/5 | Train Loss: 2.3028, Train Acc: 0.0999 | Val Loss: 2.3024, Val Acc: 0.1020  
Epoch 4/5 | Train Loss: 2.3030, Train Acc: 0.0998 | Val Loss: 2.3025, Val Acc: 0.1072  
Epoch 5/5 | Train Loss: 2.3027, Train Acc: 0.0992 | Val Loss: 2.3030, Val Acc: 0.0933
```

Run history:



Run summary:

epoch	4
training_accuracy	0.0992
training_loss	2.30268
val_accuracy	0.09333
val_loss	2.30304

View run **hl_3_bs_16_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/vovxn6>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_174748-vovxn6\logs

```
wandb: Sweep Agent: Waiting for job.
wandb: Job received.
wandb: Agent Starting Run: gz6k8290 with config:
wandb:  activation: tanh
wandb:  batch_size: 16
wandb:  epochs: 10
wandb:  hidden_layers: 3
wandb:  hidden_size: 64
wandb:  learning_rate: 0.0001
wandb:  optimizer: momentum
wandb:  weight_decay: 0.5
wandb:  weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_174810-gz6k8290

Syncing run **lilac-sweep-4** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/gz6k8290>

Epoch 1/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

Epoch 2/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

Epoch 3/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

Epoch 4/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

Epoch 5/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

Epoch 6/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

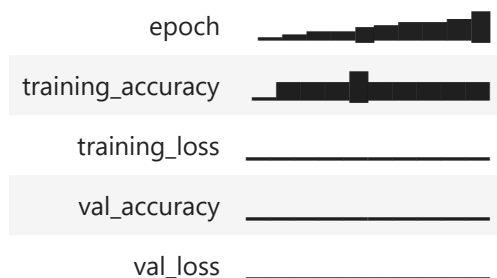
Epoch 7/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

Epoch 8/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

Epoch 9/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

Epoch 10/10 | Train Loss: 2.3026, Train Acc: 0.0257 | Val Loss: 2.3026, Val Acc: 0.0262

Run history:



Run summary:

epoch	9
training_accuracy	0.02572
training_loss	2.30259
val_accuracy	0.02617
val_loss	2.30259

View run **hl_3_bs_16_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/gz6k8290>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_174810-gz6k8290\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: dwnnyv7t with config:  
wandb:  activation: tanh  
wandb:  batch_size: 16  
wandb:  epochs: 10  
wandb:  hidden_layers: 4  
wandb:  hidden_size: 64  
wandb:  learning_rate: 0.0001  
wandb:  optimizer: rmsprop  
wandb:  weight_decay: 0.5  
wandb:  weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_174841-dwnnyv7t

Syncing run **golden-sweep-5** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/dwnnyv7t>

Epoch 1/10 | Train Loss: 2.3026, Train Acc: 0.1478 | Val Loss: 2.3026, Val Acc: 0.1845

Epoch 2/10 | Train Loss: 2.3026, Train Acc: 0.1880 | Val Loss: 2.3026, Val Acc: 0.2140

Epoch 3/10 | Train Loss: 2.3026, Train Acc: 0.2155 | Val Loss: 2.3026, Val Acc: 0.2472

Epoch 4/10 | Train Loss: 2.3026, Train Acc: 0.2575 | Val Loss: 2.3026, Val Acc: 0.2933

Epoch 5/10 | Train Loss: 2.3026, Train Acc: 0.3002 | Val Loss: 2.3026, Val Acc: 0.3145

Epoch 6/10 | Train Loss: 2.3026, Train Acc: 0.3227 | Val Loss: 2.3026, Val Acc: 0.3238

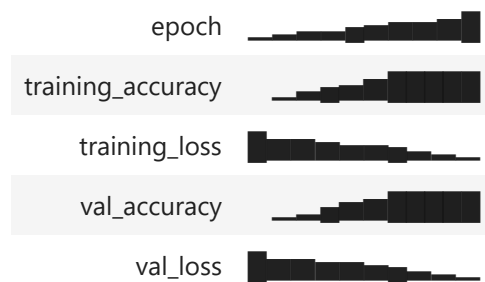
Epoch 7/10 | Train Loss: 2.3026, Train Acc: 0.3305 | Val Loss: 2.3026, Val Acc: 0.3258

Epoch 8/10 | Train Loss: 2.3026, Train Acc: 0.3312 | Val Loss: 2.3026, Val Acc: 0.3270

Epoch 9/10 | Train Loss: 2.3026, Train Acc: 0.3302 | Val Loss: 2.3026, Val Acc: 0.3272

Epoch 10/10 | Train Loss: 2.3026, Train Acc: 0.3293 | Val Loss: 2.3026, Val Acc: 0.3247

Run history:



Run summary:

epoch	9
training_accuracy	0.32926
training_loss	2.30257
val_accuracy	0.32467
val_loss	2.30257

View run **hl_4_bs_16_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/dwnnyv7t>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_174841-dwnnyv7t\logs`

```
wandb: Agent Starting Run: f5z3huy5 with config:
wandb:  activation: sigmoid
wandb:  batch_size: 32
wandb:  epochs: 10
wandb:  hidden_layers: 4
wandb:  hidden_size: 128
wandb:  learning_rate: 0.0001
wandb:  optimizer: momentum
wandb:  weight_decay: 0.5
wandb:  weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_174914-f5z3huy5`

Syncing run **fearless-sweep-6** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

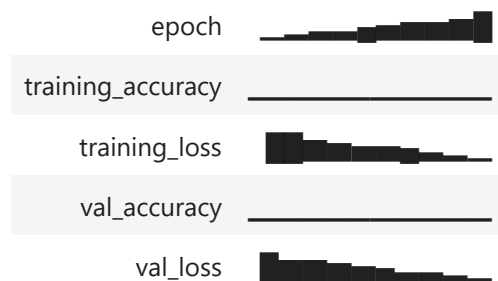
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/f5z3huy5>

```
Epoch 1/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
Epoch 2/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
Epoch 3/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
Epoch 4/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
Epoch 5/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
Epoch 6/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
Epoch 7/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
Epoch 8/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
Epoch 9/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
Epoch 10/10 | Train Loss: 2.3046, Train Acc: 0.1007 | Val Loss: 2.3059, Val Acc: 0.0933
```

Run history:



Run summary:

epoch	9
training_accuracy	0.10074
training_loss	2.30458
val_accuracy	0.09333
val_loss	2.30591

View run **hl_4_bs_32_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/f5z3huy5>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_174914-f5z3huy5\logs`

```
wandb: Agent Starting Run: bo4k00ks with config:
wandb:   activation: tanh
wandb:   batch_size: 16
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.0001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_174951-bo4k00ks`

Syncing run **efficient-sweep-7** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

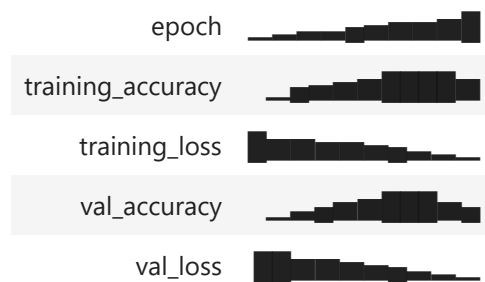
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bo4k00ks>

```
Epoch 1/10 | Train Loss: 2.3026, Train Acc: 0.1579 | Val Loss: 2.3026, Val Acc: 0.2198
Epoch 2/10 | Train Loss: 2.3026, Train Acc: 0.2196 | Val Loss: 2.3026, Val Acc: 0.2433
Epoch 3/10 | Train Loss: 2.3026, Train Acc: 0.2411 | Val Loss: 2.3026, Val Acc: 0.2580
Epoch 4/10 | Train Loss: 2.3026, Train Acc: 0.2605 | Val Loss: 2.3025, Val Acc: 0.2807
Epoch 5/10 | Train Loss: 2.3025, Train Acc: 0.2839 | Val Loss: 2.3025, Val Acc: 0.2988
Epoch 6/10 | Train Loss: 2.3025, Train Acc: 0.3009 | Val Loss: 2.3025, Val Acc: 0.3067
Epoch 7/10 | Train Loss: 2.3025, Train Acc: 0.3097 | Val Loss: 2.3025, Val Acc: 0.3110
Epoch 8/10 | Train Loss: 2.3025, Train Acc: 0.3095 | Val Loss: 2.3025, Val Acc: 0.3057
Epoch 9/10 | Train Loss: 2.3025, Train Acc: 0.3029 | Val Loss: 2.3025, Val Acc: 0.2873
Epoch 10/10 | Train Loss: 2.3025, Train Acc: 0.2878 | Val Loss: 2.3024, Val Acc: 0.2630
```

Run history:



Run summary:

epoch	9
training_accuracy	0.28778
training_loss	2.30246
val_accuracy	0.263
val_loss	2.30243

View run **hl_4_bs_16_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bo4k00ks>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_174951-bo4k00ks\logs

```
wandb: Agent Starting Run: ail26mv1 with config:
wandb: activation: sigmoid
wandb: batch_size: 32
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 64
wandb: learning_rate: 0.0001
wandb: optimizer: rmsprop
wandb: weight_decay: 0.5
wandb: weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175044-ail26mv1

Syncing run **crisp-sweep-8** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

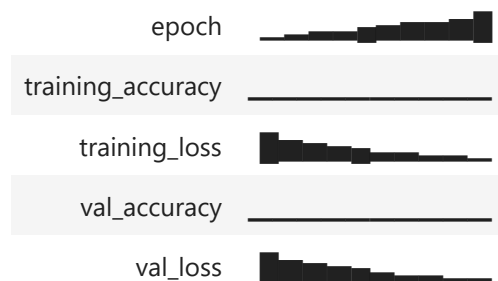
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ail26mvl>

```
Epoch 1/10 | Train Loss: 2.3044, Train Acc: 0.1001 | Val Loss: 2.3038, Val Acc: 0.0990
Epoch 2/10 | Train Loss: 2.3041, Train Acc: 0.1001 | Val Loss: 2.3037, Val Acc: 0.0990
Epoch 3/10 | Train Loss: 2.3040, Train Acc: 0.1001 | Val Loss: 2.3036, Val Acc: 0.0990
Epoch 4/10 | Train Loss: 2.3038, Train Acc: 0.1001 | Val Loss: 2.3035, Val Acc: 0.0990
Epoch 5/10 | Train Loss: 2.3037, Train Acc: 0.1001 | Val Loss: 2.3034, Val Acc: 0.0990
Epoch 6/10 | Train Loss: 2.3036, Train Acc: 0.1001 | Val Loss: 2.3033, Val Acc: 0.0990
Epoch 7/10 | Train Loss: 2.3035, Train Acc: 0.1001 | Val Loss: 2.3033, Val Acc: 0.0990
Epoch 8/10 | Train Loss: 2.3034, Train Acc: 0.1001 | Val Loss: 2.3032, Val Acc: 0.0990
Epoch 9/10 | Train Loss: 2.3033, Train Acc: 0.1001 | Val Loss: 2.3032, Val Acc: 0.0990
Epoch 10/10 | Train Loss: 2.3032, Train Acc: 0.1001 | Val Loss: 2.3031, Val Acc: 0.0990
```

Run history:



Run summary:

epoch	9
training_accuracy	0.10011
training_loss	2.30322
val_accuracy	0.099
val_loss	2.30314

View run **hl_5_bs_32_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ail26mvl>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_175044-ail26mvl\logs`

```
wandb: Agent Starting Run: 0uvpcyev with config:
wandb:   activation: relu
wandb:   batch_size: 32
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0.5
wandb:   weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175106-0uvpcyev`

Syncing run **warm-sweep-9** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

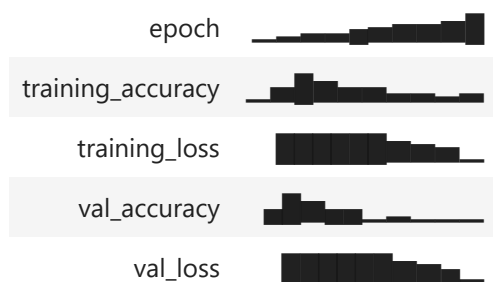
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/0uvpcyev>

```
Epoch 1/10 | Train Loss: 2.3026, Train Acc: 0.0833 | Val Loss: 2.3026, Val Acc: 0.1995
Epoch 2/10 | Train Loss: 2.3026, Train Acc: 0.2014 | Val Loss: 2.3026, Val Acc: 0.2887
Epoch 3/10 | Train Loss: 2.3026, Train Acc: 0.2939 | Val Loss: 2.3025, Val Acc: 0.2528
Epoch 4/10 | Train Loss: 2.3025, Train Acc: 0.2538 | Val Loss: 2.3025, Val Acc: 0.1973
Epoch 5/10 | Train Loss: 2.3025, Train Acc: 0.1963 | Val Loss: 2.3023, Val Acc: 0.2025
Epoch 6/10 | Train Loss: 2.3023, Train Acc: 0.2060 | Val Loss: 2.3019, Val Acc: 0.1307
Epoch 7/10 | Train Loss: 2.3019, Train Acc: 0.1337 | Val Loss: 2.3010, Val Acc: 0.1450
Epoch 8/10 | Train Loss: 2.3010, Train Acc: 0.1471 | Val Loss: 2.2992, Val Acc: 0.1207
Epoch 9/10 | Train Loss: 2.2992, Train Acc: 0.1231 | Val Loss: 2.2957, Val Acc: 0.1297
Epoch 10/10 | Train Loss: 2.2957, Train Acc: 0.1316 | Val Loss: 2.2893, Val Acc: 0.1235
```

Run history:



Run summary:

epoch	9
training_accuracy	0.13156
training_loss	2.29567
val_accuracy	0.1235
val_loss	2.28933

View run **hl_4_bs_32_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/0uvpcyev>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_175106-0uvpcyev\logs`

```
wandb: Agent Starting Run: ff1x1w37 with config:
wandb: activation: tanh
wandb: batch_size: 32
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.5
wandb: weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175127-ff1x1w37`

Syncing run **curious-sweep-10** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

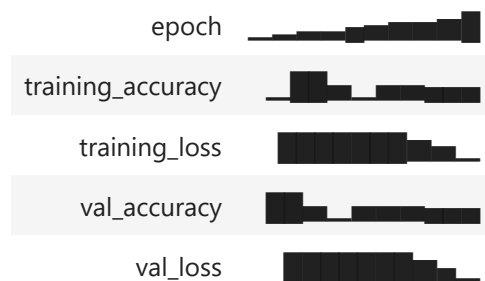
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ff1x1w37>

```
Epoch 1/10 | Train Loss: 2.3026, Train Acc: 0.1440 | Val Loss: 2.3026, Val Acc: 0.2573
Epoch 2/10 | Train Loss: 2.3026, Train Acc: 0.2674 | Val Loss: 2.3026, Val Acc: 0.2555
Epoch 3/10 | Train Loss: 2.3026, Train Acc: 0.2638 | Val Loss: 2.3025, Val Acc: 0.2135
Epoch 4/10 | Train Loss: 2.3025, Train Acc: 0.2180 | Val Loss: 2.3024, Val Acc: 0.1385
Epoch 5/10 | Train Loss: 2.3024, Train Acc: 0.1455 | Val Loss: 2.3017, Val Acc: 0.1997
Epoch 6/10 | Train Loss: 2.3017, Train Acc: 0.2074 | Val Loss: 2.2984, Val Acc: 0.2083
Epoch 7/10 | Train Loss: 2.2983, Train Acc: 0.2111 | Val Loss: 2.2861, Val Acc: 0.1992
Epoch 8/10 | Train Loss: 2.2861, Train Acc: 0.2035 | Val Loss: 2.2522, Val Acc: 0.1962
Epoch 9/10 | Train Loss: 2.2524, Train Acc: 0.2011 | Val Loss: 2.1800, Val Acc: 0.1955
Epoch 10/10 | Train Loss: 2.1806, Train Acc: 0.2003 | Val Loss: 2.0657, Val Acc: 0.1955
```

Run history:



Run summary:

epoch	9
training_accuracy	0.2003
training_loss	2.18065
val_accuracy	0.1955
val_loss	2.06568

View run **hl_5_bs_32_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ff1x1w37>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_175127-ff1x1w37\logs`

```
wandb: Agent Starting Run: qlypuoa7 with config:
wandb:   activation: tanh
wandb:   batch_size: 32
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175236-qlypuoa7`

Syncing run **fluent-sweep-11** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

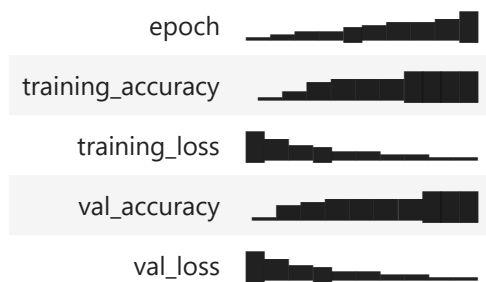
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/qlypuoa7>

```
Epoch 1/10 | Train Loss: 2.3292, Train Acc: 0.0681 | Val Loss: 2.0268, Val Acc: 0.2863
Epoch 2/10 | Train Loss: 2.0295, Train Acc: 0.2863 | Val Loss: 1.7946, Val Acc: 0.5005
Epoch 3/10 | Train Loss: 1.7951, Train Acc: 0.5013 | Val Loss: 1.5792, Val Acc: 0.6137
Epoch 4/10 | Train Loss: 1.5836, Train Acc: 0.6082 | Val Loss: 1.4042, Val Acc: 0.6292
Epoch 5/10 | Train Loss: 1.4088, Train Acc: 0.6250 | Val Loss: 1.2585, Val Acc: 0.6532
Epoch 6/10 | Train Loss: 1.2618, Train Acc: 0.6469 | Val Loss: 1.1348, Val Acc: 0.6763
Epoch 7/10 | Train Loss: 1.1397, Train Acc: 0.6689 | Val Loss: 1.0579, Val Acc: 0.6645
Epoch 8/10 | Train Loss: 1.0563, Train Acc: 0.6638 | Val Loss: 0.9724, Val Acc: 0.6975
Epoch 9/10 | Train Loss: 0.9780, Train Acc: 0.6870 | Val Loss: 0.9029, Val Acc: 0.7110
Epoch 10/10 | Train Loss: 0.9001, Train Acc: 0.7094 | Val Loss: 0.8532, Val Acc: 0.6990
```


Run history:



Run summary:

epoch	9
training_accuracy	0.70941
training_loss	0.90012
val_accuracy	0.699
val_loss	0.85319

View run **hl_5_bs_32_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/qlypuoa7>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_175236-qlypuoa7\logs

```
wandb: Agent Starting Run: lpzgqgnu with config:
wandb: activation: sigmoid
wandb: batch_size: 16
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175356-lpzgqgnu

Syncing run **vibrant-sweep-12** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

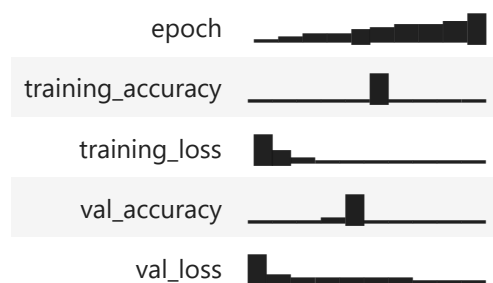
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/lpzgqgnu>

```
Epoch 1/10 | Train Loss: 2.3736, Train Acc: 0.0999 | Val Loss: 2.3281, Val Acc: 0.1013
Epoch 2/10 | Train Loss: 2.3314, Train Acc: 0.0999 | Val Loss: 2.3083, Val Acc: 0.1013
Epoch 3/10 | Train Loss: 2.3103, Train Acc: 0.0999 | Val Loss: 2.3037, Val Acc: 0.1013
Epoch 4/10 | Train Loss: 2.3029, Train Acc: 0.0999 | Val Loss: 2.3031, Val Acc: 0.1072
Epoch 5/10 | Train Loss: 2.3042, Train Acc: 0.0992 | Val Loss: 2.3033, Val Acc: 0.1655
Epoch 6/10 | Train Loss: 2.3025, Train Acc: 0.1743 | Val Loss: 2.3025, Val Acc: 0.0983
Epoch 7/10 | Train Loss: 2.3034, Train Acc: 0.1002 | Val Loss: 2.3025, Val Acc: 0.1013
Epoch 8/10 | Train Loss: 2.3017, Train Acc: 0.0999 | Val Loss: 2.3015, Val Acc: 0.0983
Epoch 9/10 | Train Loss: 2.3023, Train Acc: 0.1002 | Val Loss: 2.3013, Val Acc: 0.1013
Epoch 10/10 | Train Loss: 2.3006, Train Acc: 0.0999 | Val Loss: 2.3000, Val Acc: 0.0983
```

Run history:



Run summary:

epoch	9
training_accuracy	0.09985
training_loss	2.30059
val_accuracy	0.09833
val_loss	2.30003

View run **hl_5_bs_16_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/lpzgqgnu>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_175356-lpzgqgnu\logs

```
wandb: Agent Starting Run: tpse53r5 with config:
wandb:   activation: tanh
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 128
wandb:   learning_rate: 0.0001
wandb:   optimizer: rmsprop
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175443-tpse53r5

Syncing run **soft-sweep-13** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

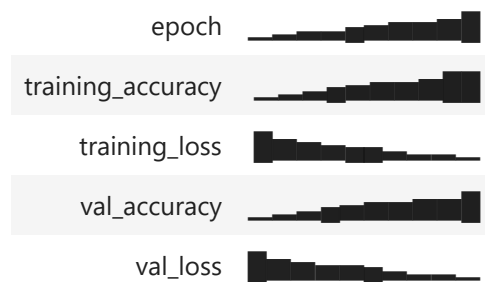
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/tpse53r5>

```
Epoch 1/10 | Train Loss: 2.4006, Train Acc: 0.0821 | Val Loss: 2.3367, Val Acc: 0.1363
Epoch 2/10 | Train Loss: 2.3402, Train Acc: 0.1393 | Val Loss: 2.2909, Val Acc: 0.1955
Epoch 3/10 | Train Loss: 2.2939, Train Acc: 0.1944 | Val Loss: 2.2498, Val Acc: 0.2378
Epoch 4/10 | Train Loss: 2.2524, Train Acc: 0.2339 | Val Loss: 2.2111, Val Acc: 0.2647
Epoch 5/10 | Train Loss: 2.2135, Train Acc: 0.2617 | Val Loss: 2.1739, Val Acc: 0.2970
Epoch 6/10 | Train Loss: 2.1760, Train Acc: 0.2948 | Val Loss: 2.1378, Val Acc: 0.3320
Epoch 7/10 | Train Loss: 2.1396, Train Acc: 0.3291 | Val Loss: 2.1024, Val Acc: 0.3593
Epoch 8/10 | Train Loss: 2.1041, Train Acc: 0.3567 | Val Loss: 2.0676, Val Acc: 0.3802
Epoch 9/10 | Train Loss: 2.0692, Train Acc: 0.3797 | Val Loss: 2.0333, Val Acc: 0.4075
Epoch 10/10 | Train Loss: 2.0349, Train Acc: 0.4024 | Val Loss: 1.9994, Val Acc: 0.4312
```

Run history:



Run summary:

epoch	9
training_accuracy	0.40237
training_loss	2.03492
val_accuracy	0.43117
val_loss	1.99943

View run **hl_5_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/tpse53r5>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_175443-tpse53r5\logs

```
wandb: Agent Starting Run: 396qm9lg with config:
wandb: activation: relu
wandb: batch_size: 32
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175552-396qm9lg

Syncing run **denim-sweep-14** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

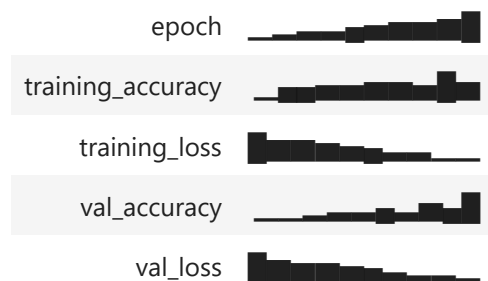
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/396qm9lg>

```
Epoch 1/10 | Train Loss: 2.2969, Train Acc: 0.0724 | Val Loss: 2.2334, Val Acc: 0.2587
Epoch 2/10 | Train Loss: 2.2314, Train Acc: 0.2651 | Val Loss: 2.1584, Val Acc: 0.2447
Epoch 3/10 | Train Loss: 2.1558, Train Acc: 0.2526 | Val Loss: 2.0791, Val Acc: 0.2997
Epoch 4/10 | Train Loss: 2.0775, Train Acc: 0.3066 | Val Loss: 1.9949, Val Acc: 0.3147
Epoch 5/10 | Train Loss: 1.9908, Train Acc: 0.3174 | Val Loss: 1.9070, Val Acc: 0.3460
Epoch 6/10 | Train Loss: 1.9095, Train Acc: 0.3403 | Val Loss: 1.8332, Val Acc: 0.3587
Epoch 7/10 | Train Loss: 1.8280, Train Acc: 0.3549 | Val Loss: 1.7719, Val Acc: 0.3165
Epoch 8/10 | Train Loss: 1.7791, Train Acc: 0.3124 | Val Loss: 1.6836, Val Acc: 0.4690
Epoch 9/10 | Train Loss: 1.6812, Train Acc: 0.4693 | Val Loss: 1.6232, Val Acc: 0.3747
Epoch 10/10 | Train Loss: 1.6339, Train Acc: 0.3742 | Val Loss: 1.5529, Val Acc: 0.5465
```

Run history:



Run summary:

epoch	9
training_accuracy	0.37424
training_loss	1.6339
val_accuracy	0.5465
val_loss	1.55285

View run **hl_5_bs_32_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/396qm9lg>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_175552-396qm9lg\logs`

```
wandb: Agent Starting Run: yva47fje with config:
wandb:   activation: tanh
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175614-yva47fje`

Syncing run **super-sweep-15** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

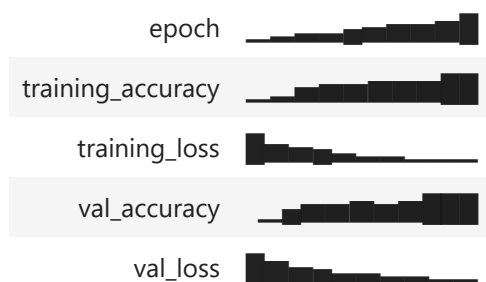
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/yva47fje>

```
Epoch 1/10 | Train Loss: 2.4242, Train Acc: 0.0800 | Val Loss: 2.1326, Val Acc: 0.1245
Epoch 2/10 | Train Loss: 2.1307, Train Acc: 0.1274 | Val Loss: 1.9249, Val Acc: 0.3498
Epoch 3/10 | Train Loss: 1.9284, Train Acc: 0.3500 | Val Loss: 1.7243, Val Acc: 0.4745
Epoch 4/10 | Train Loss: 1.7312, Train Acc: 0.4710 | Val Loss: 1.5685, Val Acc: 0.4683
Epoch 5/10 | Train Loss: 1.5712, Train Acc: 0.4689 | Val Loss: 1.4310, Val Acc: 0.5633
Epoch 6/10 | Train Loss: 1.4417, Train Acc: 0.5598 | Val Loss: 1.3534, Val Acc: 0.5083
Epoch 7/10 | Train Loss: 1.3548, Train Acc: 0.5059 | Val Loss: 1.2717, Val Acc: 0.5430
Epoch 8/10 | Train Loss: 1.2832, Train Acc: 0.5366 | Val Loss: 1.2067, Val Acc: 0.6205
Epoch 9/10 | Train Loss: 1.2124, Train Acc: 0.6142 | Val Loss: 1.1951, Val Acc: 0.6035
Epoch 10/10 | Train Loss: 1.1994, Train Acc: 0.5997 | Val Loss: 1.1302, Val Acc: 0.6223
```

Run history:



Run summary:

epoch	9
training_accuracy	0.59974
training_loss	1.19944
val_accuracy	0.62233
val_loss	1.13016

View run **hl_5_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/yva47fje>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_175614-yva47fje\logs

```
wandb: Agent Starting Run: h98ozjwv with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175717-h98ozjwv

Syncing run **helpful-sweep-16** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

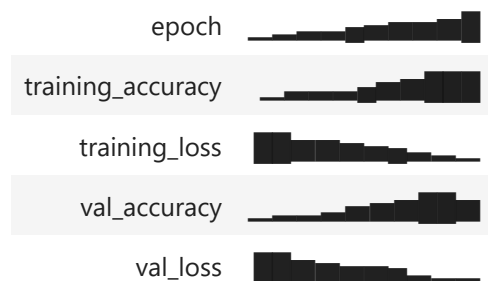
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/h98ozjwv>

```
Epoch 1/10 | Train Loss: 2.2972, Train Acc: 0.0866 | Val Loss: 2.2507, Val Acc: 0.2137
Epoch 2/10 | Train Loss: 2.2531, Train Acc: 0.2097 | Val Loss: 2.1899, Val Acc: 0.2802
Epoch 3/10 | Train Loss: 2.1928, Train Acc: 0.2728 | Val Loss: 2.1131, Val Acc: 0.2805
Epoch 4/10 | Train Loss: 2.1167, Train Acc: 0.2765 | Val Loss: 2.0198, Val Acc: 0.3235
Epoch 5/10 | Train Loss: 2.0242, Train Acc: 0.3181 | Val Loss: 1.9101, Val Acc: 0.4363
Epoch 6/10 | Train Loss: 1.9156, Train Acc: 0.4327 | Val Loss: 1.7854, Val Acc: 0.5405
Epoch 7/10 | Train Loss: 1.7920, Train Acc: 0.5227 | Val Loss: 1.6476, Val Acc: 0.6023
Epoch 8/10 | Train Loss: 1.6552, Train Acc: 0.5863 | Val Loss: 1.5012, Val Acc: 0.6350
Epoch 9/10 | Train Loss: 1.5093, Train Acc: 0.6242 | Val Loss: 1.3682, Val Acc: 0.6157
Epoch 10/10 | Train Loss: 1.3755, Train Acc: 0.6140 | Val Loss: 1.3122, Val Acc: 0.5793
```

Run history:



Run summary:

epoch	9
training_accuracy	0.61402
training_loss	1.37552
val_accuracy	0.57933
val_loss	1.31221

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/h98ozjwv>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_175717-h98ozjwv\logs`

```
wandb: Agent Starting Run: ckrxphhy with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175738-ckrxphhy`

Syncing run **pious-sweep-17** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

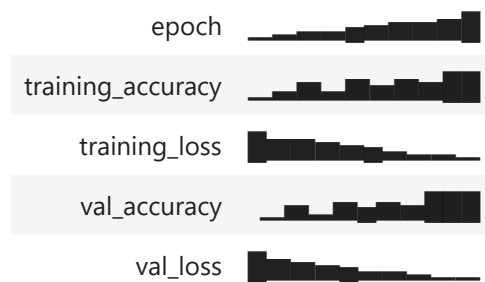
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ckrxphhy>

```
Epoch 1/10 | Train Loss: 2.3022, Train Acc: 0.2181 | Val Loss: 2.2466, Val Acc: 0.2973
Epoch 2/10 | Train Loss: 2.2473, Train Acc: 0.2909 | Val Loss: 2.1680, Val Acc: 0.4310
Epoch 3/10 | Train Loss: 2.1696, Train Acc: 0.4259 | Val Loss: 2.0655, Val Acc: 0.3375
Epoch 4/10 | Train Loss: 2.0684, Train Acc: 0.3326 | Val Loss: 1.9518, Val Acc: 0.4803
Epoch 5/10 | Train Loss: 1.9550, Train Acc: 0.4807 | Val Loss: 1.8392, Val Acc: 0.4022
Epoch 6/10 | Train Loss: 1.8439, Train Acc: 0.4002 | Val Loss: 1.7564, Val Acc: 0.4853
Epoch 7/10 | Train Loss: 1.7624, Train Acc: 0.4803 | Val Loss: 1.6888, Val Acc: 0.4378
Epoch 8/10 | Train Loss: 1.6951, Train Acc: 0.4322 | Val Loss: 1.6163, Val Acc: 0.5468
Epoch 9/10 | Train Loss: 1.6252, Train Acc: 0.5399 | Val Loss: 1.5592, Val Acc: 0.5453
Epoch 10/10 | Train Loss: 1.5672, Train Acc: 0.5400 | Val Loss: 1.5255, Val Acc: 0.5625
```

Run history:



Run summary:

epoch	9
training_accuracy	0.53996
training_loss	1.56718
val_accuracy	0.5625
val_loss	1.5255

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ckrxphhy>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_175738-ckrxphhy\logs

```
wandb: Agent Starting Run: lyr77izf with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 64
wandb: learning_rate: 0.001
wandb: optimizer: rmsprop
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175800-lyr77izf

Syncing run **chocolate-sweep-18** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

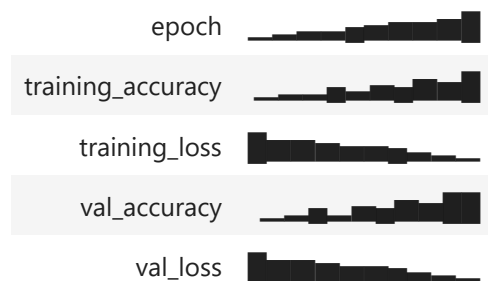
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/lyr77izf>

```
Epoch 1/10 | Train Loss: 2.3149, Train Acc: 0.1003 | Val Loss: 2.2742, Val Acc: 0.1337
Epoch 2/10 | Train Loss: 2.2768, Train Acc: 0.1269 | Val Loss: 2.2432, Val Acc: 0.1627
Epoch 3/10 | Train Loss: 2.2467, Train Acc: 0.1605 | Val Loss: 2.2074, Val Acc: 0.2592
Epoch 4/10 | Train Loss: 2.2119, Train Acc: 0.2505 | Val Loss: 2.1660, Val Acc: 0.2015
Epoch 5/10 | Train Loss: 2.1720, Train Acc: 0.2029 | Val Loss: 2.1202, Val Acc: 0.3232
Epoch 6/10 | Train Loss: 2.1278, Train Acc: 0.3159 | Val Loss: 2.0699, Val Acc: 0.2658
Epoch 7/10 | Train Loss: 2.0783, Train Acc: 0.2622 | Val Loss: 2.0296, Val Acc: 0.3955
Epoch 8/10 | Train Loss: 2.0392, Train Acc: 0.3855 | Val Loss: 1.9651, Val Acc: 0.3523
Epoch 9/10 | Train Loss: 1.9753, Train Acc: 0.3526 | Val Loss: 1.9168, Val Acc: 0.4498
Epoch 10/10 | Train Loss: 1.9279, Train Acc: 0.4382 | Val Loss: 1.8514, Val Acc: 0.4593
```

Run history:



Run summary:

epoch	9
training_accuracy	0.43819
training_loss	1.92791
val_accuracy	0.45933
val_loss	1.8514

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/lyr77izf>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_175800-lyr77izf\logs`

```
wandb: Agent Starting Run: if6kj2tl with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nesterov
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175816-if6kj2tl`

Syncing run **smooth-sweep-19** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

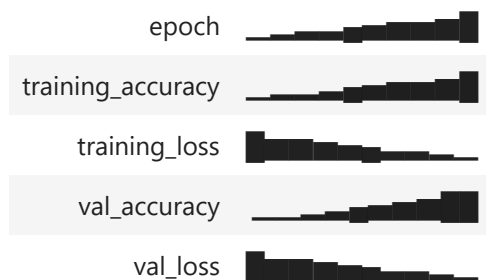
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/if6kj2tl>

```
Epoch 1/10 | Train Loss: 2.3052, Train Acc: 0.1382 | Val Loss: 2.3046, Val Acc: 0.1375
Epoch 2/10 | Train Loss: 2.3050, Train Acc: 0.1385 | Val Loss: 2.3045, Val Acc: 0.1378
Epoch 3/10 | Train Loss: 2.3048, Train Acc: 0.1389 | Val Loss: 2.3043, Val Acc: 0.1382
Epoch 4/10 | Train Loss: 2.3046, Train Acc: 0.1393 | Val Loss: 2.3041, Val Acc: 0.1393
Epoch 5/10 | Train Loss: 2.3045, Train Acc: 0.1397 | Val Loss: 2.3039, Val Acc: 0.1400
Epoch 6/10 | Train Loss: 2.3043, Train Acc: 0.1403 | Val Loss: 2.3037, Val Acc: 0.1407
Epoch 7/10 | Train Loss: 2.3041, Train Acc: 0.1406 | Val Loss: 2.3035, Val Acc: 0.1418
Epoch 8/10 | Train Loss: 2.3039, Train Acc: 0.1410 | Val Loss: 2.3033, Val Acc: 0.1425
Epoch 9/10 | Train Loss: 2.3037, Train Acc: 0.1413 | Val Loss: 2.3031, Val Acc: 0.1430
Epoch 10/10 | Train Loss: 2.3035, Train Acc: 0.1419 | Val Loss: 2.3029, Val Acc: 0.1433
```

Run history:



Run summary:

epoch	9
training_accuracy	0.14185
training_loss	2.30347
val_accuracy	0.14333
val_loss	2.30291

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/lf6kj2tl>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_175816-lf6kj2tl\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: ojs4um31 with config:  
wandb:  activation: tanh  
wandb:  batch_size: 64  
wandb:  epochs: 10  
wandb:  hidden_layers: 5  
wandb:  hidden_size: 64  
wandb:  learning_rate: 0.001  
wandb:  optimizer: nadam  
wandb:  weight_decay: 0.0005  
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175847-ojs4um31

Syncing run **blooming-sweep-20** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

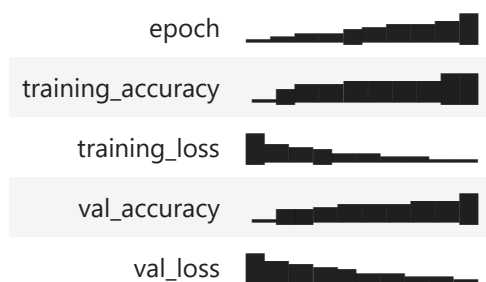
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ojs4um31>

Epoch 1/10		Train Loss: 2.2993,	Train Acc: 0.1318		Val Loss: 2.0852,	Val Acc: 0.3082
Epoch 2/10		Train Loss: 2.0882,	Train Acc: 0.3028		Val Loss: 1.9429,	Val Acc: 0.4205
Epoch 3/10		Train Loss: 1.9503,	Train Acc: 0.4164		Val Loss: 1.8706,	Val Acc: 0.4318
Epoch 4/10		Train Loss: 1.8744,	Train Acc: 0.4265		Val Loss: 1.7578,	Val Acc: 0.4882
Epoch 5/10		Train Loss: 1.7663,	Train Acc: 0.4775		Val Loss: 1.7061,	Val Acc: 0.5010
Epoch 6/10		Train Loss: 1.7104,	Train Acc: 0.4996		Val Loss: 1.6230,	Val Acc: 0.4997
Epoch 7/10		Train Loss: 1.6321,	Train Acc: 0.4922		Val Loss: 1.5882,	Val Acc: 0.5247
Epoch 8/10		Train Loss: 1.5926,	Train Acc: 0.5206		Val Loss: 1.5065,	Val Acc: 0.5508
Epoch 9/10		Train Loss: 1.5144,	Train Acc: 0.5487		Val Loss: 1.4779,	Val Acc: 0.5508
Epoch 10/10		Train Loss: 1.4829,	Train Acc: 0.5511		Val Loss: 1.3999,	Val Acc: 0.6060

Run history:



Run summary:

epoch	9
training_accuracy	0.55107
training_loss	1.48287
val_accuracy	0.606
val_loss	1.39992

View run **hl_5_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ojs4um31>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_175847-ojs4um31\logs

```
wandb: Agent Starting Run: nwys84mq with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 64
wandb: learning_rate: 0.0001
wandb: optimizer: nadam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175925-nwys84mq

Syncing run **celestial-sweep-21** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

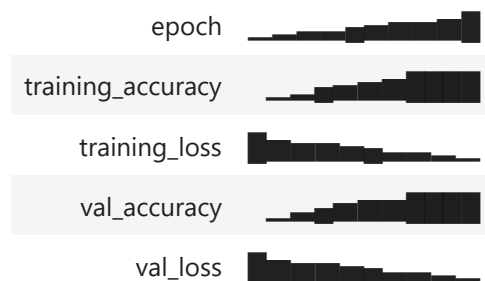
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/nwys84mq>

```
Epoch 1/10 | Train Loss: 2.3045, Train Acc: 0.0935 | Val Loss: 2.2998, Val Acc: 0.1242
Epoch 2/10 | Train Loss: 2.3000, Train Acc: 0.1250 | Val Loss: 2.2958, Val Acc: 0.1543
Epoch 3/10 | Train Loss: 2.2960, Train Acc: 0.1561 | Val Loss: 2.2918, Val Acc: 0.1828
Epoch 4/10 | Train Loss: 2.2920, Train Acc: 0.1860 | Val Loss: 2.2878, Val Acc: 0.2073
Epoch 5/10 | Train Loss: 2.2880, Train Acc: 0.2087 | Val Loss: 2.2838, Val Acc: 0.2243
Epoch 6/10 | Train Loss: 2.2840, Train Acc: 0.2246 | Val Loss: 2.2798, Val Acc: 0.2327
Epoch 7/10 | Train Loss: 2.2800, Train Acc: 0.2352 | Val Loss: 2.2758, Val Acc: 0.2388
Epoch 8/10 | Train Loss: 2.2761, Train Acc: 0.2413 | Val Loss: 2.2719, Val Acc: 0.2420
Epoch 9/10 | Train Loss: 2.2721, Train Acc: 0.2449 | Val Loss: 2.2680, Val Acc: 0.2425
Epoch 10/10 | Train Loss: 2.2682, Train Acc: 0.2452 | Val Loss: 2.2640, Val Acc: 0.2402
```

Run history:



Run summary:

epoch	9
training_accuracy	0.2452
training_loss	2.26818
val_accuracy	0.24017
val_loss	2.26396

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/nwys84mq>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_175925-nwys84mq\logs`

```
wandb: Agent Starting Run: 1yjw21u with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 128
wandb:   learning_rate: 0.0001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_175941-1yjw21u`

Syncing run **gallant-sweep-22** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

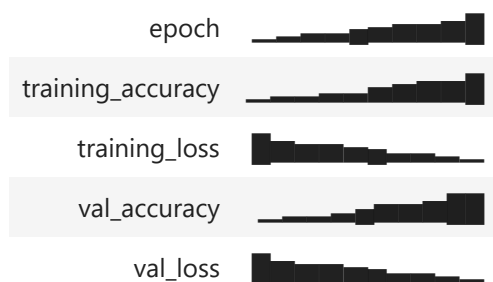
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/1yjw21u>

```
Epoch 1/10 | Train Loss: 2.3041, Train Acc: 0.1035 | Val Loss: 2.2965, Val Acc: 0.1147
Epoch 2/10 | Train Loss: 2.2961, Train Acc: 0.1151 | Val Loss: 2.2892, Val Acc: 0.1302
Epoch 3/10 | Train Loss: 2.2890, Train Acc: 0.1277 | Val Loss: 2.2821, Val Acc: 0.1440
Epoch 4/10 | Train Loss: 2.2821, Train Acc: 0.1400 | Val Loss: 2.2752, Val Acc: 0.1620
Epoch 5/10 | Train Loss: 2.2752, Train Acc: 0.1563 | Val Loss: 2.2682, Val Acc: 0.1825
Epoch 6/10 | Train Loss: 2.2683, Train Acc: 0.1794 | Val Loss: 2.2611, Val Acc: 0.2093
Epoch 7/10 | Train Loss: 2.2613, Train Acc: 0.2039 | Val Loss: 2.2539, Val Acc: 0.2302
Epoch 8/10 | Train Loss: 2.2542, Train Acc: 0.2253 | Val Loss: 2.2466, Val Acc: 0.2423
Epoch 9/10 | Train Loss: 2.2470, Train Acc: 0.2404 | Val Loss: 2.2391, Val Acc: 0.2530
Epoch 10/10 | Train Loss: 2.2395, Train Acc: 0.2514 | Val Loss: 2.2314, Val Acc: 0.2618
```

Run history:



Run summary:

epoch	9
training_accuracy	0.25143
training_loss	2.23954
val_accuracy	0.26183
val_loss	2.23142

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/1yjw21u>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_175941-1yjw21u\logs

```
wandb: Agent Starting Run: 6pt6vx3i with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180008-6pt6vx3i

Syncing run **graceful-sweep-23** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

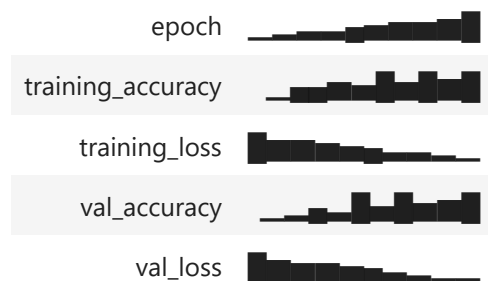
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/6pt6vx3i>

```
Epoch 1/10 | Train Loss: 2.3062, Train Acc: 0.0352 | Val Loss: 2.2438, Val Acc: 0.2112
Epoch 2/10 | Train Loss: 2.2437, Train Acc: 0.2125 | Val Loss: 2.1703, Val Acc: 0.2433
Epoch 3/10 | Train Loss: 2.1692, Train Acc: 0.2439 | Val Loss: 2.0786, Val Acc: 0.3632
Epoch 4/10 | Train Loss: 2.0786, Train Acc: 0.3598 | Val Loss: 1.9879, Val Acc: 0.2925
Epoch 5/10 | Train Loss: 1.9879, Train Acc: 0.2931 | Val Loss: 1.9131, Val Acc: 0.5052
Epoch 6/10 | Train Loss: 1.9131, Train Acc: 0.5044 | Val Loss: 1.8128, Val Acc: 0.3827
Epoch 7/10 | Train Loss: 1.8129, Train Acc: 0.3854 | Val Loss: 1.7351, Val Acc: 0.5158
Epoch 8/10 | Train Loss: 1.7366, Train Acc: 0.5129 | Val Loss: 1.6476, Val Acc: 0.4242
Epoch 9/10 | Train Loss: 1.6490, Train Acc: 0.4248 | Val Loss: 1.5624, Val Acc: 0.4855
Epoch 10/10 | Train Loss: 1.5654, Train Acc: 0.4908 | Val Loss: 1.5169, Val Acc: 0.5170
```

Run history:



Run summary:

epoch	9
training_accuracy	0.49078
training_loss	1.56536
val_accuracy	0.517
val_loss	1.5169

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/6pt6vx3i>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180008-6pt6vx3i\logs

```
wandb: Agent Starting Run: kwe6xhfx with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 64
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180030-kwe6xhfx

Syncing run **brisk-sweep-24** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

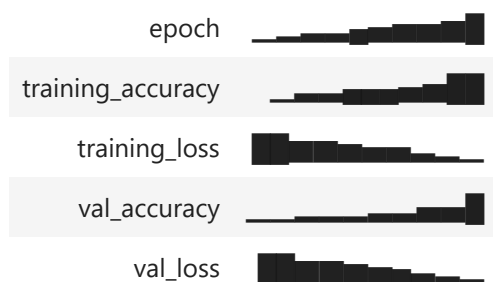
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/kwe6xhfx>

```
Epoch 1/10 | Train Loss: 2.3101, Train Acc: 0.1304 | Val Loss: 2.2855, Val Acc: 0.2107
Epoch 2/10 | Train Loss: 2.2857, Train Acc: 0.2027 | Val Loss: 2.2614, Val Acc: 0.2210
Epoch 3/10 | Train Loss: 2.2620, Train Acc: 0.2120 | Val Loss: 2.2414, Val Acc: 0.2423
Epoch 4/10 | Train Loss: 2.2421, Train Acc: 0.2366 | Val Loss: 2.2074, Val Acc: 0.2482
Epoch 5/10 | Train Loss: 2.2092, Train Acc: 0.2331 | Val Loss: 2.1732, Val Acc: 0.2608
Epoch 6/10 | Train Loss: 2.1745, Train Acc: 0.2541 | Val Loss: 2.1254, Val Acc: 0.2790
Epoch 7/10 | Train Loss: 2.1280, Train Acc: 0.2691 | Val Loss: 2.0726, Val Acc: 0.3073
Epoch 8/10 | Train Loss: 2.0746, Train Acc: 0.3051 | Val Loss: 2.0088, Val Acc: 0.3960
Epoch 9/10 | Train Loss: 2.0127, Train Acc: 0.3829 | Val Loss: 1.9420, Val Acc: 0.3792
Epoch 10/10 | Train Loss: 1.9449, Train Acc: 0.3780 | Val Loss: 1.8697, Val Acc: 0.5035
```

Run history:



Run summary:

epoch	9
training_accuracy	0.37798
training_loss	1.94492
val_accuracy	0.5035
val_loss	1.86971

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/kwe6xhfx>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_180030-kwe6xhfx\logs`

```
wandb: Sweep Agent: Waiting for job.
wandb: Job received.
wandb: Agent Starting Run: p6da90si with config:
wandb:  activation: tanh
wandb:  batch_size: 64
wandb:  epochs: 10
wandb:  hidden_layers: 5
wandb:  hidden_size: 64
wandb:  learning_rate: 0.001
wandb:  optimizer: nadam
wandb:  weight_decay: 0.5
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180050-p6da90si`

Syncing run **solar-sweep-25** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

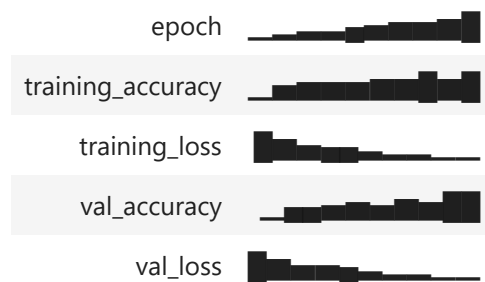
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/p6da90si>

Epoch 1/10		Train Loss: 2.2794,	Train Acc: 0.1132		Val Loss: 2.0949,	Val Acc: 0.3580
Epoch 2/10		Train Loss: 2.1029,	Train Acc: 0.3435		Val Loss: 1.9631,	Val Acc: 0.4590
Epoch 3/10		Train Loss: 1.9667,	Train Acc: 0.4457		Val Loss: 1.8323,	Val Acc: 0.4377
Epoch 4/10		Train Loss: 1.8420,	Train Acc: 0.4255		Val Loss: 1.7494,	Val Acc: 0.4677
Epoch 5/10		Train Loss: 1.7537,	Train Acc: 0.4643		Val Loss: 1.6469,	Val Acc: 0.5092
Epoch 6/10		Train Loss: 1.6557,	Train Acc: 0.5045		Val Loss: 1.5857,	Val Acc: 0.4710
Epoch 7/10		Train Loss: 1.5905,	Train Acc: 0.4734		Val Loss: 1.5059,	Val Acc: 0.5565
Epoch 8/10		Train Loss: 1.5143,	Train Acc: 0.5501		Val Loss: 1.4543,	Val Acc: 0.5222
Epoch 9/10		Train Loss: 1.4595,	Train Acc: 0.5242		Val Loss: 1.4031,	Val Acc: 0.5758
Epoch 10/10		Train Loss: 1.4105,	Train Acc: 0.5668		Val Loss: 1.3620,	Val Acc: 0.5727

Run history:



Run summary:

epoch	9
training_accuracy	0.56683
training_loss	1.41049
val_accuracy	0.57267
val_loss	1.36203

View run **hl_5_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/p6da90si>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180050-p6da90si\logs

```
wandb: Sweep Agent: Waiting for job.
wandb: Job received.
wandb: Agent Starting Run: e9cbwes9 with config:
wandb:   activation: tanh
wandb:   batch_size: 32
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 32
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180112-e9cbwes9

Syncing run **generous-sweep-26** to Weights & Biases (docs)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

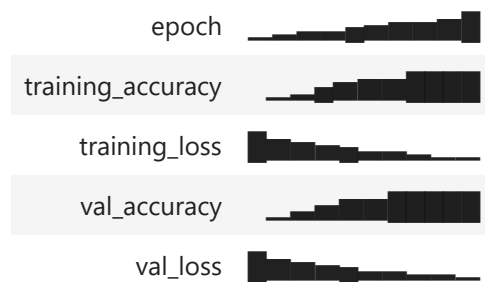
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/e9cbwes9>

Epoch 1/10		Train Loss: 2.3428,	Train Acc: 0.0385		Val Loss: 2.2376,	Val Acc: 0.1410
Epoch 2/10		Train Loss: 2.2333,	Train Acc: 0.1456		Val Loss: 2.1535,	Val Acc: 0.2460
Epoch 3/10		Train Loss: 2.1485,	Train Acc: 0.2568		Val Loss: 2.0645,	Val Acc: 0.4098
Epoch 4/10		Train Loss: 2.0611,	Train Acc: 0.4101		Val Loss: 1.9853,	Val Acc: 0.5120
Epoch 5/10		Train Loss: 1.9839,	Train Acc: 0.5102		Val Loss: 1.9187,	Val Acc: 0.5293
Epoch 6/10		Train Loss: 1.9168,	Train Acc: 0.5275		Val Loss: 1.8588,	Val Acc: 0.5517
Epoch 7/10		Train Loss: 1.8570,	Train Acc: 0.5527		Val Loss: 1.8045,	Val Acc: 0.5648
Epoch 8/10		Train Loss: 1.8022,	Train Acc: 0.5660		Val Loss: 1.7538,	Val Acc: 0.5675
Epoch 9/10		Train Loss: 1.7519,	Train Acc: 0.5686		Val Loss: 1.7116,	Val Acc: 0.5658
Epoch 10/10		Train Loss: 1.7076,	Train Acc: 0.5677		Val Loss: 1.6698,	Val Acc: 0.5792

Run history:



Run summary:

epoch	9
training_accuracy	0.56774
training_loss	1.70759
val_accuracy	0.57917
val_loss	1.66983

View run **hl_5_bs_32_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/e9cbwes9>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180112-e9cbwes9\logs

```
wandb: Agent Starting Run: 2ymyuuzh with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: rmsprop
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180123-2ymyuuzh

Syncing run **worthy-sweep-27** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

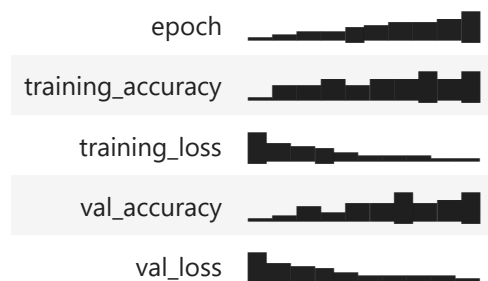
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/2ymyuuzh>

```
Epoch 1/10 | Train Loss: 2.3112, Train Acc: 0.1509 | Val Loss: 1.9634, Val Acc: 0.4148
Epoch 2/10 | Train Loss: 1.9617, Train Acc: 0.4202 | Val Loss: 1.7208, Val Acc: 0.4370
Epoch 3/10 | Train Loss: 1.7317, Train Acc: 0.4290 | Val Loss: 1.5719, Val Acc: 0.5493
Epoch 4/10 | Train Loss: 1.5712, Train Acc: 0.5532 | Val Loss: 1.4359, Val Acc: 0.4803
Epoch 5/10 | Train Loss: 1.4494, Train Acc: 0.4684 | Val Loss: 1.3434, Val Acc: 0.5755
Epoch 6/10 | Train Loss: 1.3442, Train Acc: 0.5749 | Val Loss: 1.2539, Val Acc: 0.5655
Epoch 7/10 | Train Loss: 1.2594, Train Acc: 0.5649 | Val Loss: 1.2493, Val Acc: 0.6457
Epoch 8/10 | Train Loss: 1.2515, Train Acc: 0.6451 | Val Loss: 1.1731, Val Acc: 0.5893
Epoch 9/10 | Train Loss: 1.1687, Train Acc: 0.5910 | Val Loss: 1.1370, Val Acc: 0.6287
Epoch 10/10 | Train Loss: 1.1478, Train Acc: 0.6193 | Val Loss: 1.0731, Val Acc: 0.6402
```

Run history:



Run summary:

epoch	9
training_accuracy	0.61933
training_loss	1.14781
val_accuracy	0.64017
val_loss	1.0731

View run **hl_5_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/2ymyuuzh>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180123-2ymyuuzh\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: 9nd6t1qz with config:  
wandb:   activation: tanh  
wandb:   batch_size: 64  
wandb:   epochs: 10  
wandb:   hidden_layers: 3  
wandb:   hidden_size: 128  
wandb:   learning_rate: 0.001  
wandb:   optimizer: nadam  
wandb:   weight_decay: 0.5  
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180155-9nd6t1qz

Syncing run **spring-sweep-28** to Weights & Biases (docs)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

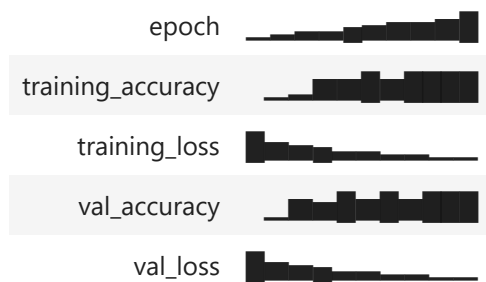
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/9nd6t1qz>

```
Epoch 1/10 | Train Loss: 2.3374, Train Acc: 0.1100 | Val Loss: 2.0112, Val Acc: 0.2085  
Epoch 2/10 | Train Loss: 2.0113, Train Acc: 0.2093 | Val Loss: 1.7880, Val Acc: 0.5550  
Epoch 3/10 | Train Loss: 1.7934, Train Acc: 0.5532 | Val Loss: 1.6022, Val Acc: 0.5478  
Epoch 4/10 | Train Loss: 1.6074, Train Acc: 0.5362 | Val Loss: 1.4715, Val Acc: 0.6127  
Epoch 5/10 | Train Loss: 1.4772, Train Acc: 0.6106 | Val Loss: 1.3706, Val Acc: 0.5710  
Epoch 6/10 | Train Loss: 1.3773, Train Acc: 0.5590 | Val Loss: 1.2867, Val Acc: 0.6293  
Epoch 7/10 | Train Loss: 1.2897, Train Acc: 0.6296 | Val Loss: 1.2252, Val Acc: 0.6103  
Epoch 8/10 | Train Loss: 1.2317, Train Acc: 0.6041 | Val Loss: 1.1614, Val Acc: 0.6325  
Epoch 9/10 | Train Loss: 1.1632, Train Acc: 0.6326 | Val Loss: 1.1047, Val Acc: 0.6372  
Epoch 10/10 | Train Loss: 1.1111, Train Acc: 0.6295 | Val Loss: 1.0648, Val Acc: 0.6422
```

Run history:



Run summary:

epoch	9
training_accuracy	0.62948
training_loss	1.11114
val_accuracy	0.64217
val_loss	1.06483

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/9nd6t1qz>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180155-9nd6t1qz\logs

```
wandb: Agent Starting Run: omfc70px with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 64
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180211-omfc70px

Syncing run **firm-sweep-29** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

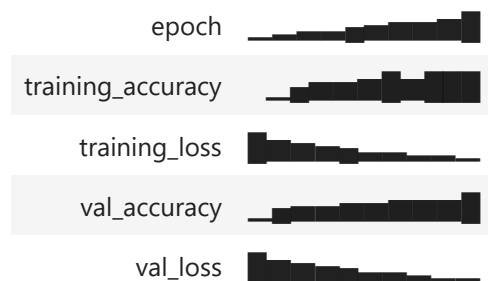
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/omfc70px>

```
Epoch 1/10 | Train Loss: 2.3067, Train Acc: 0.0868 | Val Loss: 2.1483, Val Acc: 0.2677
Epoch 2/10 | Train Loss: 2.1491, Train Acc: 0.2684 | Val Loss: 2.0125, Val Acc: 0.4305
Epoch 3/10 | Train Loss: 2.0179, Train Acc: 0.4258 | Val Loss: 1.9222, Val Acc: 0.4472
Epoch 4/10 | Train Loss: 1.9257, Train Acc: 0.4475 | Val Loss: 1.8238, Val Acc: 0.4648
Epoch 5/10 | Train Loss: 1.8312, Train Acc: 0.4595 | Val Loss: 1.7472, Val Acc: 0.5263
Epoch 6/10 | Train Loss: 1.7532, Train Acc: 0.5250 | Val Loss: 1.6719, Val Acc: 0.5170
Epoch 7/10 | Train Loss: 1.6796, Train Acc: 0.5105 | Val Loss: 1.6003, Val Acc: 0.5485
Epoch 8/10 | Train Loss: 1.6075, Train Acc: 0.5465 | Val Loss: 1.5457, Val Acc: 0.5533
Epoch 9/10 | Train Loss: 1.5526, Train Acc: 0.5487 | Val Loss: 1.4785, Val Acc: 0.5532
Epoch 10/10 | Train Loss: 1.4866, Train Acc: 0.5505 | Val Loss: 1.4425, Val Acc: 0.5980
```

Run history:



Run summary:

epoch	9
training_accuracy	0.55052
training_loss	1.48657
val_accuracy	0.598
val_loss	1.44245

View run **hl_5_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/omfc70px>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180211-omfc70px\logs

```
wandb: Agent Starting Run: rv0dxg7m with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180228-rv0dxg7m

Syncing run **noble-sweep-30** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

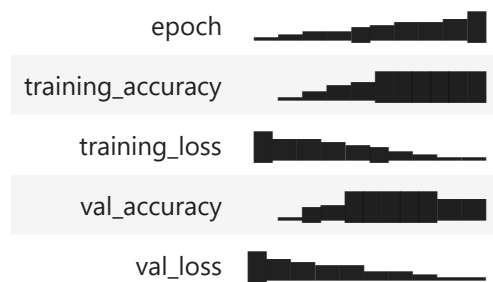
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/rv0dxg7m>

```
Epoch 1/10 | Train Loss: 2.3079, Train Acc: 0.1125 | Val Loss: 2.2244, Val Acc: 0.2272
Epoch 2/10 | Train Loss: 2.2249, Train Acc: 0.2258 | Val Loss: 2.1315, Val Acc: 0.3817
Epoch 3/10 | Train Loss: 2.1322, Train Acc: 0.3861 | Val Loss: 2.0278, Val Acc: 0.4345
Epoch 4/10 | Train Loss: 2.0298, Train Acc: 0.4316 | Val Loss: 1.9103, Val Acc: 0.5323
Epoch 5/10 | Train Loss: 1.9140, Train Acc: 0.5166 | Val Loss: 1.8033, Val Acc: 0.5542
Epoch 6/10 | Train Loss: 1.8084, Train Acc: 0.5463 | Val Loss: 1.6728, Val Acc: 0.5375
Epoch 7/10 | Train Loss: 1.6803, Train Acc: 0.5371 | Val Loss: 1.5819, Val Acc: 0.5428
Epoch 8/10 | Train Loss: 1.5899, Train Acc: 0.5361 | Val Loss: 1.4765, Val Acc: 0.5343
Epoch 9/10 | Train Loss: 1.4866, Train Acc: 0.5292 | Val Loss: 1.4253, Val Acc: 0.5217
Epoch 10/10 | Train Loss: 1.4347, Train Acc: 0.5173 | Val Loss: 1.3721, Val Acc: 0.5037
```

Run history:



Run summary:

epoch	9
training_accuracy	0.51733
training_loss	1.43475
val_accuracy	0.50367
val_loss	1.37206

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/rv0dxg7m>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180228-rv0dxg7m\logs

```
wandb: Agent Starting Run: jbnryl8p with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 3
wandb: hidden_size: 64
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180244-jbnryl8p

Syncing run **lunar-sweep-31** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

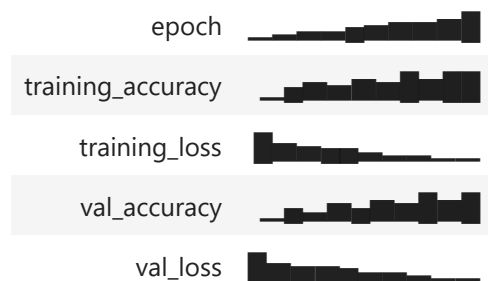
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/jbnryl8p>

```
Epoch 1/10 | Train Loss: 2.3279, Train Acc: 0.1121 | Val Loss: 2.1132, Val Acc: 0.3338
Epoch 2/10 | Train Loss: 2.1142, Train Acc: 0.3411 | Val Loss: 1.9480, Val Acc: 0.4437
Epoch 3/10 | Train Loss: 1.9496, Train Acc: 0.4426 | Val Loss: 1.8285, Val Acc: 0.4275
Epoch 4/10 | Train Loss: 1.8308, Train Acc: 0.4259 | Val Loss: 1.7408, Val Acc: 0.5347
Epoch 5/10 | Train Loss: 1.7422, Train Acc: 0.5379 | Val Loss: 1.6572, Val Acc: 0.4755
Epoch 6/10 | Train Loss: 1.6597, Train Acc: 0.4700 | Val Loss: 1.5788, Val Acc: 0.5767
Epoch 7/10 | Train Loss: 1.5800, Train Acc: 0.5842 | Val Loss: 1.5160, Val Acc: 0.5445
Epoch 8/10 | Train Loss: 1.5190, Train Acc: 0.5390 | Val Loss: 1.4547, Val Acc: 0.6105
Epoch 9/10 | Train Loss: 1.4557, Train Acc: 0.6130 | Val Loss: 1.4018, Val Acc: 0.5813
Epoch 10/10 | Train Loss: 1.4049, Train Acc: 0.5839 | Val Loss: 1.3512, Val Acc: 0.6245
```

Run history:



Run summary:

epoch	9
training_accuracy	0.58385
training_loss	1.40493
val_accuracy	0.6245
val_loss	1.35125

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/jbnryl8p>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180244-jbnryl8p\logs

```
wandb: Agent Starting Run: fvboboc1 with config:
wandb:   activation: tanh
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 64
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180305-fvboboc1

Syncing run **swift-sweep-32** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

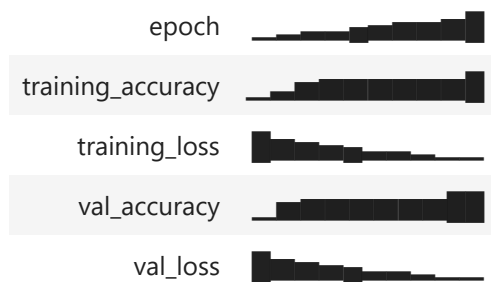
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fvboboc1>

```
Epoch 1/10 | Train Loss: 2.2983, Train Acc: 0.1106 | Val Loss: 2.1588, Val Acc: 0.2732
Epoch 2/10 | Train Loss: 2.1576, Train Acc: 0.2751 | Val Loss: 2.0163, Val Acc: 0.5117
Epoch 3/10 | Train Loss: 2.0168, Train Acc: 0.5124 | Val Loss: 1.8841, Val Acc: 0.5632
Epoch 4/10 | Train Loss: 1.8861, Train Acc: 0.5546 | Val Loss: 1.7656, Val Acc: 0.5702
Epoch 5/10 | Train Loss: 1.7690, Train Acc: 0.5681 | Val Loss: 1.6601, Val Acc: 0.5687
Epoch 6/10 | Train Loss: 1.6640, Train Acc: 0.5689 | Val Loss: 1.5659, Val Acc: 0.5668
Epoch 7/10 | Train Loss: 1.5702, Train Acc: 0.5656 | Val Loss: 1.4822, Val Acc: 0.5807
Epoch 8/10 | Train Loss: 1.4867, Train Acc: 0.5826 | Val Loss: 1.4076, Val Acc: 0.5775
Epoch 9/10 | Train Loss: 1.4116, Train Acc: 0.5791 | Val Loss: 1.3401, Val Acc: 0.6292
Epoch 10/10 | Train Loss: 1.3438, Train Acc: 0.6235 | Val Loss: 1.2796, Val Acc: 0.6078
```

Run history:



Run summary:

epoch	9
training_accuracy	0.62346
training_loss	1.34381
val_accuracy	0.60783
val_loss	1.27962

View run **hl_5_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fvboboc1>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180305-fvboboc1\logs

```
wandb: Agent Starting Run: flx89vux with config:
wandb:   activation: sigmoid
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 64
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180322-flx89vux

Syncing run **pious-sweep-33** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

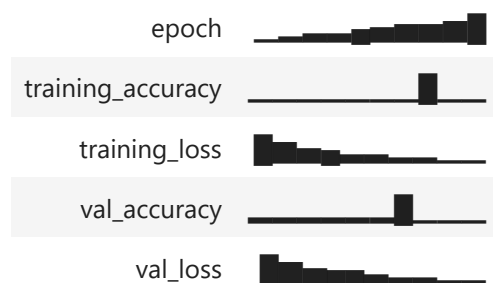
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/flx89vux>

```
Epoch 1/10 | Train Loss: 2.4644, Train Acc: 0.0999 | Val Loss: 2.4412, Val Acc: 0.1013
Epoch 2/10 | Train Loss: 2.4316, Train Acc: 0.0999 | Val Loss: 2.4150, Val Acc: 0.1013
Epoch 3/10 | Train Loss: 2.4060, Train Acc: 0.0999 | Val Loss: 2.3923, Val Acc: 0.1013
Epoch 4/10 | Train Loss: 2.3841, Train Acc: 0.0999 | Val Loss: 2.3729, Val Acc: 0.1013
Epoch 5/10 | Train Loss: 2.3654, Train Acc: 0.0999 | Val Loss: 2.3565, Val Acc: 0.1013
Epoch 6/10 | Train Loss: 2.3498, Train Acc: 0.0999 | Val Loss: 2.3425, Val Acc: 0.1013
Epoch 7/10 | Train Loss: 2.3366, Train Acc: 0.0999 | Val Loss: 2.3312, Val Acc: 0.1407
Epoch 8/10 | Train Loss: 2.3259, Train Acc: 0.1478 | Val Loss: 2.3217, Val Acc: 0.0933
Epoch 9/10 | Train Loss: 2.3172, Train Acc: 0.1007 | Val Loss: 2.3143, Val Acc: 0.0933
Epoch 10/10 | Train Loss: 2.3105, Train Acc: 0.1007 | Val Loss: 2.3088, Val Acc: 0.0933
```

Run history:



Run summary:

epoch	9
training_accuracy	0.10074
training_loss	2.31054
val_accuracy	0.09333
val_loss	2.30879

View run **hl_5_bs_64_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/flx89vux>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180322-flx89vux\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: 8ehl6eoz with config:  
wandb:   activation: tanh  
wandb:   batch_size: 64  
wandb:   epochs: 5  
wandb:   hidden_layers: 3  
wandb:   hidden_size: 128  
wandb:   learning_rate: 0.001  
wandb:   optimizer: nadam  
wandb:   weight_decay: 0  
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180347-8ehl6eoz

Syncing run **pious-sweep-34** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

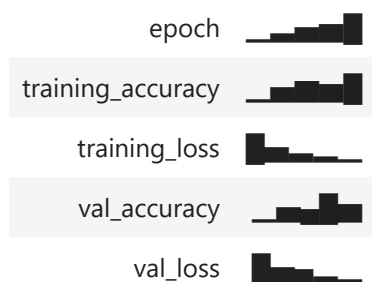
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/8ehl6eoz>

```
Epoch 1/5 | Train Loss: 2.3799, Train Acc: 0.0534 | Val Loss: 2.0564, Val Acc: 0.3512  
Epoch 2/5 | Train Loss: 2.0551, Train Acc: 0.3621 | Val Loss: 1.8189, Val Acc: 0.4915  
Epoch 3/5 | Train Loss: 1.8235, Train Acc: 0.4927 | Val Loss: 1.6656, Val Acc: 0.4575  
Epoch 4/5 | Train Loss: 1.6673, Train Acc: 0.4687 | Val Loss: 1.5109, Val Acc: 0.6000  
Epoch 5/5 | Train Loss: 1.5199, Train Acc: 0.5936 | Val Loss: 1.4129, Val Acc: 0.5363
```

Run history:



Run summary:

epoch	4
training_accuracy	0.59356
training_loss	1.51986
val_accuracy	0.53633
val_loss	1.41285

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/8ehl6eoz>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180347-8ehl6eoz\logs

```
wandb: Agent Starting Run: fo5z1xt0 with config:
wandb:  activation: relu
wandb:  batch_size: 64
wandb:  epochs: 10
wandb:  hidden_layers: 4
wandb:  hidden_size: 128
wandb:  learning_rate: 0.001
wandb:  optimizer: rmsprop
wandb:  weight_decay: 0.5
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180405-fo5z1xt0

Syncing run **dainty-sweep-35** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

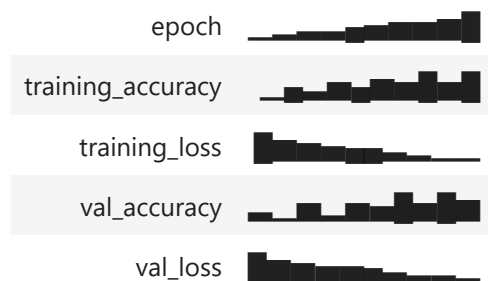
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fo5z1xt0>

```
Epoch 1/10 | Train Loss: 2.3001, Train Acc: 0.1035 | Val Loss: 2.1982, Val Acc: 0.3240
Epoch 2/10 | Train Loss: 2.1997, Train Acc: 0.3153 | Val Loss: 2.0791, Val Acc: 0.2353
Epoch 3/10 | Train Loss: 2.0835, Train Acc: 0.2298 | Val Loss: 1.9867, Val Acc: 0.4750
Epoch 4/10 | Train Loss: 1.9891, Train Acc: 0.4697 | Val Loss: 1.8586, Val Acc: 0.2840
Epoch 5/10 | Train Loss: 1.8651, Train Acc: 0.2804 | Val Loss: 1.7899, Val Acc: 0.5017
Epoch 6/10 | Train Loss: 1.7944, Train Acc: 0.5001 | Val Loss: 1.6465, Val Acc: 0.4310
Epoch 7/10 | Train Loss: 1.6528, Train Acc: 0.4281 | Val Loss: 1.5731, Val Acc: 0.5688
Epoch 8/10 | Train Loss: 1.5811, Train Acc: 0.5623 | Val Loss: 1.5067, Val Acc: 0.4678
Epoch 9/10 | Train Loss: 1.5121, Train Acc: 0.4646 | Val Loss: 1.4575, Val Acc: 0.5870
Epoch 10/10 | Train Loss: 1.4662, Train Acc: 0.5826 | Val Loss: 1.3354, Val Acc: 0.5283
```

Run history:



Run summary:

epoch	9
training_accuracy	0.58256
training_loss	1.46616
val_accuracy	0.52833
val_loss	1.33538

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fo5z1xt0>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_180405-fo5z1xt0\logs`

```
wandb: Agent Starting Run: 37c3rs1r with config:
wandb:   activation: tanh
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180426-37c3rs1r`

Syncing run **balmy-sweep-36** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

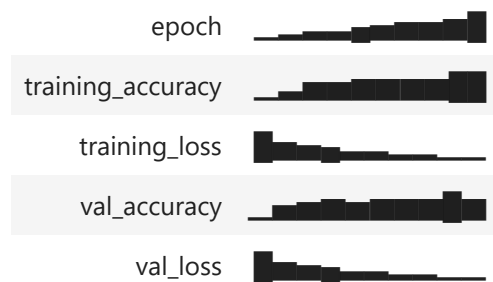
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/37c3rs1r>

```
Epoch 1/10 | Train Loss: 2.4164, Train Acc: 0.0255 | Val Loss: 2.1121, Val Acc: 0.1943
Epoch 2/10 | Train Loss: 2.1095, Train Acc: 0.1986 | Val Loss: 1.8805, Val Acc: 0.4810
Epoch 3/10 | Train Loss: 1.8856, Train Acc: 0.4722 | Val Loss: 1.6946, Val Acc: 0.5062
Epoch 4/10 | Train Loss: 1.6990, Train Acc: 0.5031 | Val Loss: 1.5513, Val Acc: 0.5648
Epoch 5/10 | Train Loss: 1.5584, Train Acc: 0.5624 | Val Loss: 1.4431, Val Acc: 0.5445
Epoch 6/10 | Train Loss: 1.4490, Train Acc: 0.5423 | Val Loss: 1.3450, Val Acc: 0.6015
Epoch 7/10 | Train Loss: 1.3505, Train Acc: 0.5982 | Val Loss: 1.2774, Val Acc: 0.5862
Epoch 8/10 | Train Loss: 1.2846, Train Acc: 0.5889 | Val Loss: 1.2164, Val Acc: 0.6128
Epoch 9/10 | Train Loss: 1.2204, Train Acc: 0.6141 | Val Loss: 1.1577, Val Acc: 0.6535
Epoch 10/10 | Train Loss: 1.1658, Train Acc: 0.6473 | Val Loss: 1.1161, Val Acc: 0.6133
```

Run history:



Run summary:

epoch	9
training_accuracy	0.64733
training_loss	1.16579
val_accuracy	0.61333
val_loss	1.11613

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/37c3rslr>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180426-37c3rslr\logs

```
wandb: Agent Starting Run: vi3olzsx with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 5
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: rmsprop
wandb: weight_decay: 0
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180514-vi3olzsx

Syncing run **resilient-sweep-37** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

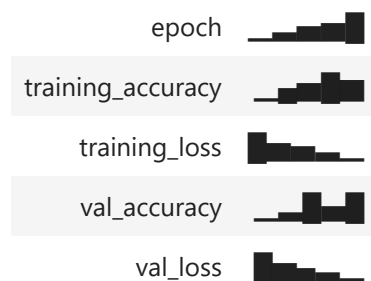
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/vi3olzsx>

```
Epoch 1/5 | Train Loss: 2.3229, Train Acc: 0.0519 | Val Loss: 2.1849, Val Acc: 0.3123
Epoch 2/5 | Train Loss: 2.1842, Train Acc: 0.3111 | Val Loss: 2.0383, Val Acc: 0.3887
Epoch 3/5 | Train Loss: 2.0387, Train Acc: 0.3946 | Val Loss: 1.8856, Val Acc: 0.5755
Epoch 4/5 | Train Loss: 1.8874, Train Acc: 0.5789 | Val Loss: 1.7447, Val Acc: 0.4683
Epoch 5/5 | Train Loss: 1.7465, Train Acc: 0.4745 | Val Loss: 1.6074, Val Acc: 0.5948
```

Run history:



Run summary:

epoch	4
training_accuracy	0.47446
training_loss	1.7465
val_accuracy	0.59483
val_loss	1.60742

View run **hl_3_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/vi3olzsx>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180514-vi3olzsx\logs

```
wandb: Agent Starting Run: dgj5yrez with config:
wandb:   activation: tanh
wandb:   batch_size: 64
wandb:   epochs: 5
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180526-dgj5yrez

Syncing run **chocolate-sweep-38** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

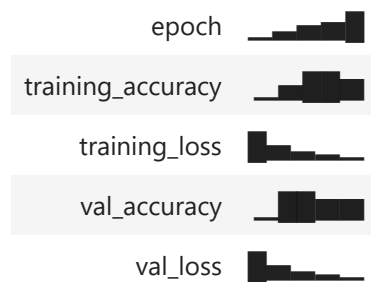
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/dgj5yrez>

```
Epoch 1/5 | Train Loss: 2.3363, Train Acc: 0.1223 | Val Loss: 2.0032, Val Acc: 0.3990
Epoch 2/5 | Train Loss: 2.0039, Train Acc: 0.4003 | Val Loss: 1.7309, Val Acc: 0.6045
Epoch 3/5 | Train Loss: 1.7367, Train Acc: 0.6003 | Val Loss: 1.5384, Val Acc: 0.6153
Epoch 4/5 | Train Loss: 1.5453, Train Acc: 0.6157 | Val Loss: 1.4383, Val Acc: 0.5778
Epoch 5/5 | Train Loss: 1.4478, Train Acc: 0.5776 | Val Loss: 1.3487, Val Acc: 0.5732
```

Run history:



Run summary:

epoch	4
training_accuracy	0.57761
training_loss	1.44784
val_accuracy	0.57317
val_loss	1.34869

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/dgj5yrez>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180526-dgj5yrez\logs

```
wandb: Agent Starting Run: fk26e652 with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 5
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: rmsprop
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180552-fk26e652

Syncing run **splendid-sweep-39** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

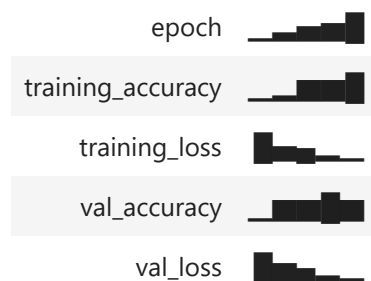
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fk26e652>

```
Epoch 1/5 | Train Loss: 2.3803, Train Acc: 0.1106 | Val Loss: 2.0781, Val Acc: 0.1562
Epoch 2/5 | Train Loss: 2.0755, Train Acc: 0.1557 | Val Loss: 1.8766, Val Acc: 0.4757
Epoch 3/5 | Train Loss: 1.8765, Train Acc: 0.4728 | Val Loss: 1.6789, Val Acc: 0.4762
Epoch 4/5 | Train Loss: 1.6839, Train Acc: 0.4737 | Val Loss: 1.5511, Val Acc: 0.5255
Epoch 5/5 | Train Loss: 1.5504, Train Acc: 0.5302 | Val Loss: 1.4482, Val Acc: 0.4780
```

Run history:



Run summary:

epoch	4
training_accuracy	0.5302
training_loss	1.55039
val_accuracy	0.478
val_loss	1.44822

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fk26e652>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180552-fk26e652\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: 03sq486i with config:  
wandb:   activation: relu  
wandb:   batch_size: 64  
wandb:   epochs: 10  
wandb:   hidden_layers: 4  
wandb:   hidden_size: 128  
wandb:   learning_rate: 0.001  
wandb:   optimizer: adam  
wandb:   weight_decay: 0.5  
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180623-03sq486i

Syncing run **driven-sweep-40** to Weights & Biases (docs)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

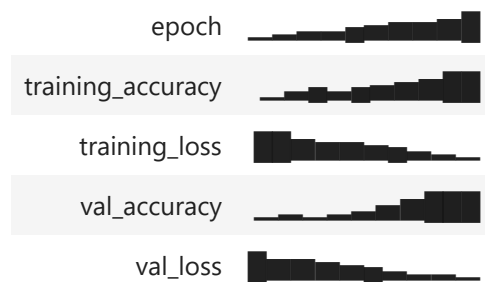
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/03sq486i>

Epoch 1/10		Train Loss: 2.2980,	Train Acc: 0.0774		Val Loss: 2.2221,	Val Acc: 0.2882
Epoch 2/10		Train Loss: 2.2243,	Train Acc: 0.2813		Val Loss: 2.1308,	Val Acc: 0.2993
Epoch 3/10		Train Loss: 2.1343,	Train Acc: 0.3006		Val Loss: 2.0218,	Val Acc: 0.2673
Epoch 4/10		Train Loss: 2.0257,	Train Acc: 0.2670		Val Loss: 1.8927,	Val Acc: 0.3058
Epoch 5/10		Train Loss: 1.8974,	Train Acc: 0.3078		Val Loss: 1.7458,	Val Acc: 0.3853
Epoch 6/10		Train Loss: 1.7513,	Train Acc: 0.3930		Val Loss: 1.5887,	Val Acc: 0.4708
Epoch 7/10		Train Loss: 1.5950,	Train Acc: 0.4671		Val Loss: 1.4286,	Val Acc: 0.5830
Epoch 8/10		Train Loss: 1.4361,	Train Acc: 0.5772		Val Loss: 1.2790,	Val Acc: 0.6450
Epoch 9/10		Train Loss: 1.2872,	Train Acc: 0.6366		Val Loss: 1.1476,	Val Acc: 0.6572
Epoch 10/10		Train Loss: 1.1580,	Train Acc: 0.6510		Val Loss: 1.0542,	Val Acc: 0.6540

Run history:



Run summary:

epoch	9
training_accuracy	0.65102
training_loss	1.15802
val_accuracy	0.654
val_loss	1.0542

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/03sq486i>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180623-03sq486i\logs

```
wandb: Sweep Agent: Waiting for job.
wandb: Job received.
wandb: Agent Starting Run: kfm3rz1b with config:
wandb:  activation: tanh
wandb:  batch_size: 64
wandb:  epochs: 5
wandb:  hidden_layers: 3
wandb:  hidden_size: 128
wandb:  learning_rate: 0.001
wandb:  optimizer: adam
wandb:  weight_decay: 0
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180651-kfm3rz1b

Syncing run **bumbling-sweep-41** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/kfm3rz1b>

Epoch 1/5 | Train Loss: 2.2798, Train Acc: 0.1677 | Val Loss: 1.9914, Val Acc: 0.4117

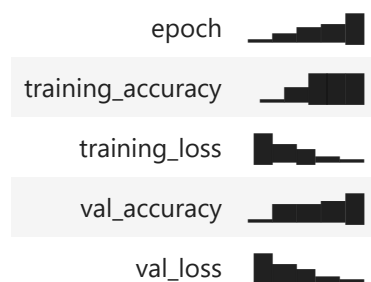
Epoch 2/5 | Train Loss: 1.9952, Train Acc: 0.4093 | Val Loss: 1.7575, Val Acc: 0.5793

Epoch 3/5 | Train Loss: 1.7639, Train Acc: 0.5729 | Val Loss: 1.5579, Val Acc: 0.5677

Epoch 4/5 | Train Loss: 1.5663, Train Acc: 0.5651 | Val Loss: 1.3990, Val Acc: 0.5892

Epoch 5/5 | Train Loss: 1.4075, Train Acc: 0.5886 | Val Loss: 1.2700, Val Acc: 0.6307

Run history:



Run summary:

epoch	4
training_accuracy	0.58861
training_loss	1.40748
val_accuracy	0.63067
val_loss	1.27003

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/kfm3rz1b>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180651-kfm3rz1b\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: 2z520egw with config:  
wandb:   activation: relu  
wandb:   batch_size: 64  
wandb:   epochs: 10  
wandb:   hidden_layers: 4  
wandb:   hidden_size: 128  
wandb:   learning_rate: 0.0001  
wandb:   optimizer: nadam  
wandb:   weight_decay: 0.0005  
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180723-2z520egw

Syncing run **graceful-sweep-42** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/2z520egw>

Epoch 1/10 | Train Loss: 2.3141, Train Acc: 0.0730 | Val Loss: 2.2982, Val Acc: 0.1277

Epoch 2/10 | Train Loss: 2.2994, Train Acc: 0.1217 | Val Loss: 2.2857, Val Acc: 0.1663

Epoch 3/10 | Train Loss: 2.2867, Train Acc: 0.1609 | Val Loss: 2.2741, Val Acc: 0.1955

Epoch 4/10 | Train Loss: 2.2751, Train Acc: 0.1901 | Val Loss: 2.2631, Val Acc: 0.2222

Epoch 5/10 | Train Loss: 2.2640, Train Acc: 0.2135 | Val Loss: 2.2525, Val Acc: 0.2393

Epoch 6/10 | Train Loss: 2.2533, Train Acc: 0.2333 | Val Loss: 2.2421, Val Acc: 0.2570

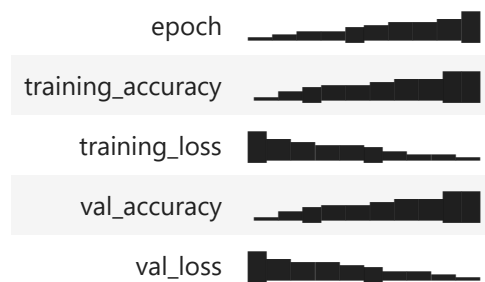
Epoch 7/10 | Train Loss: 2.2428, Train Acc: 0.2513 | Val Loss: 2.2317, Val Acc: 0.2723

Epoch 8/10 | Train Loss: 2.2324, Train Acc: 0.2671 | Val Loss: 2.2212, Val Acc: 0.2865

Epoch 9/10 | Train Loss: 2.2219, Train Acc: 0.2814 | Val Loss: 2.2106, Val Acc: 0.2980

Epoch 10/10 | Train Loss: 2.2113, Train Acc: 0.2949 | Val Loss: 2.1999, Val Acc: 0.3072

Run history:



Run summary:

epoch	9
training_accuracy	0.29489
training_loss	2.21133
val_accuracy	0.30717
val_loss	2.19991

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/2z520egw>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180723-2z520egw\logs

```
wandb: Agent Starting Run: lpsh2uot with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 5
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180745-lpsh2uot

Syncing run **expert-sweep-43** to [Weights & Biases](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw) (docs)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

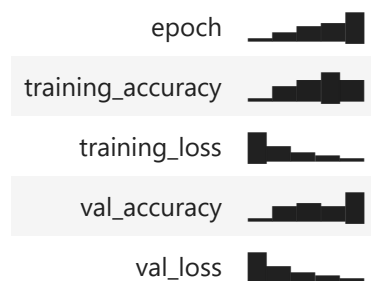
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/lpsh2uot>

```
Epoch 1/5 | Train Loss: 2.3541, Train Acc: 0.0493 | Val Loss: 2.0230, Val Acc: 0.3563
Epoch 2/5 | Train Loss: 2.0252, Train Acc: 0.3561 | Val Loss: 1.7665, Val Acc: 0.5362
Epoch 3/5 | Train Loss: 1.7702, Train Acc: 0.5275 | Val Loss: 1.5882, Val Acc: 0.5717
Epoch 4/5 | Train Loss: 1.5969, Train Acc: 0.5662 | Val Loss: 1.5065, Val Acc: 0.5177
Epoch 5/5 | Train Loss: 1.5087, Train Acc: 0.5202 | Val Loss: 1.3865, Val Acc: 0.6420
```

Run history:



Run summary:

epoch	4
training_accuracy	0.5202
training_loss	1.5087
val_accuracy	0.642
val_loss	1.38649

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/lpsh2uot>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180745-lpsh2uot\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: hknorbte with config:  
wandb:   activation: relu  
wandb:   batch_size: 64  
wandb:   epochs: 10  
wandb:   hidden_layers: 4  
wandb:   hidden_size: 128  
wandb:   learning_rate: 0.0001  
wandb:   optimizer: nadam  
wandb:   weight_decay: 0.0005  
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180816-hknorbte

Syncing run **cerulean-sweep-44** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

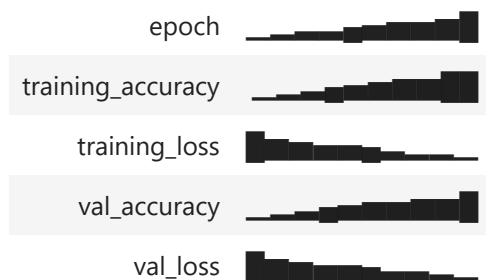
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/hknorbte>

Epoch 1/10		Train Loss: 2.3033,	Train Acc: 0.0592		Val Loss: 2.2913,	Val Acc: 0.1010
Epoch 2/10		Train Loss: 2.2906,	Train Acc: 0.1036		Val Loss: 2.2805,	Val Acc: 0.1402
Epoch 3/10		Train Loss: 2.2797,	Train Acc: 0.1451		Val Loss: 2.2705,	Val Acc: 0.1718
Epoch 4/10		Train Loss: 2.2696,	Train Acc: 0.1815		Val Loss: 2.2610,	Val Acc: 0.2067
Epoch 5/10		Train Loss: 2.2600,	Train Acc: 0.2138		Val Loss: 2.2518,	Val Acc: 0.2345
Epoch 6/10		Train Loss: 2.2509,	Train Acc: 0.2400		Val Loss: 2.2429,	Val Acc: 0.2557
Epoch 7/10		Train Loss: 2.2419,	Train Acc: 0.2610		Val Loss: 2.2340,	Val Acc: 0.2717
Epoch 8/10		Train Loss: 2.2330,	Train Acc: 0.2786		Val Loss: 2.2251,	Val Acc: 0.2905
Epoch 9/10		Train Loss: 2.2240,	Train Acc: 0.2954		Val Loss: 2.2159,	Val Acc: 0.3083
Epoch 10/10		Train Loss: 2.2149,	Train Acc: 0.3119		Val Loss: 2.2066,	Val Acc: 0.3312

Run history:



Run summary:

epoch	9
training_accuracy	0.31185
training_loss	2.21487
val_accuracy	0.33117
val_loss	2.2066

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/hknorbte>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_180816-hknorbte\logs`

```
wandb: Agent Starting Run: mat62vcb with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: rmsprop
wandb: weight_decay: 0
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180838-mat62vcb`

Syncing run **solar-sweep-45** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

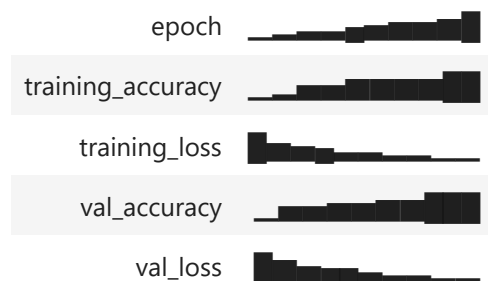
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/mat62vcb>

```
Epoch 1/10 | Train Loss: 2.2719, Train Acc: 0.1825 | Val Loss: 1.9157, Val Acc: 0.2792
Epoch 2/10 | Train Loss: 1.9152, Train Acc: 0.2800 | Val Loss: 1.7466, Val Acc: 0.4793
Epoch 3/10 | Train Loss: 1.7508, Train Acc: 0.4824 | Val Loss: 1.5810, Val Acc: 0.4785
Epoch 4/10 | Train Loss: 1.5828, Train Acc: 0.4808 | Val Loss: 1.4424, Val Acc: 0.5793
Epoch 5/10 | Train Loss: 1.4495, Train Acc: 0.5743 | Val Loss: 1.3674, Val Acc: 0.5843
Epoch 6/10 | Train Loss: 1.3698, Train Acc: 0.5794 | Val Loss: 1.2775, Val Acc: 0.6325
Epoch 7/10 | Train Loss: 1.2864, Train Acc: 0.6263 | Val Loss: 1.2253, Val Acc: 0.6328
Epoch 8/10 | Train Loss: 1.2271, Train Acc: 0.6279 | Val Loss: 1.1603, Val Acc: 0.6460
Epoch 9/10 | Train Loss: 1.1700, Train Acc: 0.6367 | Val Loss: 1.1010, Val Acc: 0.6697
Epoch 10/10 | Train Loss: 1.0998, Train Acc: 0.6688 | Val Loss: 1.0574, Val Acc: 0.6710
```

Run history:



Run summary:

epoch	9
training_accuracy	0.6688
training_loss	1.09975
val_accuracy	0.671
val_loss	1.05736

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/mat62vcb>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_180838-mat62vcb\logs`

```
wandb: Agent Starting Run: mm7gege0 with config:
wandb:   activation: sigmoid
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180916-mm7gege0`

Syncing run **pretty-sweep-46** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

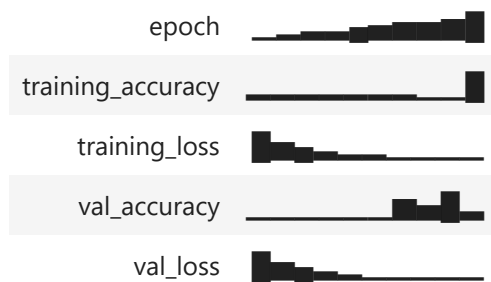
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/mm7gege0>

```
Epoch 1/10 | Train Loss: 2.5159, Train Acc: 0.1007 | Val Loss: 2.4541, Val Acc: 0.0933
Epoch 2/10 | Train Loss: 2.4434, Train Acc: 0.1007 | Val Loss: 2.3991, Val Acc: 0.0933
Epoch 3/10 | Train Loss: 2.3903, Train Acc: 0.1007 | Val Loss: 2.3599, Val Acc: 0.0933
Epoch 4/10 | Train Loss: 2.3531, Train Acc: 0.1007 | Val Loss: 2.3320, Val Acc: 0.0933
Epoch 5/10 | Train Loss: 2.3274, Train Acc: 0.1007 | Val Loss: 2.3133, Val Acc: 0.0933
Epoch 6/10 | Train Loss: 2.3107, Train Acc: 0.1007 | Val Loss: 2.3019, Val Acc: 0.0933
Epoch 7/10 | Train Loss: 2.3010, Train Acc: 0.1007 | Val Loss: 2.2965, Val Acc: 0.1072
Epoch 8/10 | Train Loss: 2.2969, Train Acc: 0.0992 | Val Loss: 2.2951, Val Acc: 0.1020
Epoch 9/10 | Train Loss: 2.2960, Train Acc: 0.0998 | Val Loss: 2.2937, Val Acc: 0.1085
Epoch 10/10 | Train Loss: 2.2946, Train Acc: 0.1122 | Val Loss: 2.2909, Val Acc: 0.0983
```

Run history:



Run summary:

epoch	9
training_accuracy	0.11217
training_loss	2.29459
val_accuracy	0.09833
val_loss	2.29085

View run **hl_4_bs_64_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/mm7gege0>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_180916-mm7gege0\logs

```
wandb: Agent Starting Run: ibysoylb with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: adam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_180948-ibysoylb

Syncing run **hopeful-sweep-47** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

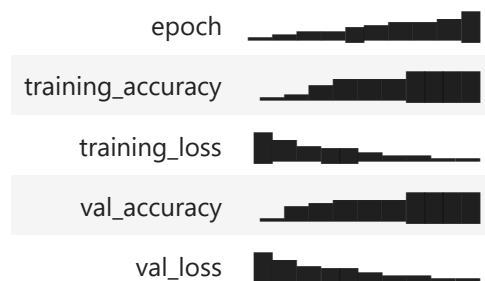
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ibysoylb>

```
Epoch 1/10 | Train Loss: 2.3898, Train Acc: 0.1138 | Val Loss: 2.1056, Val Acc: 0.1898
Epoch 2/10 | Train Loss: 2.1090, Train Acc: 0.1890 | Val Loss: 1.8800, Val Acc: 0.4453
Epoch 3/10 | Train Loss: 1.8854, Train Acc: 0.4345 | Val Loss: 1.6781, Val Acc: 0.5723
Epoch 4/10 | Train Loss: 1.6832, Train Acc: 0.5647 | Val Loss: 1.5078, Val Acc: 0.6058
Epoch 5/10 | Train Loss: 1.5133, Train Acc: 0.6006 | Val Loss: 1.3696, Val Acc: 0.6302
Epoch 6/10 | Train Loss: 1.3752, Train Acc: 0.6261 | Val Loss: 1.2560, Val Acc: 0.6538
Epoch 7/10 | Train Loss: 1.2604, Train Acc: 0.6457 | Val Loss: 1.1577, Val Acc: 0.6643
Epoch 8/10 | Train Loss: 1.1618, Train Acc: 0.6564 | Val Loss: 1.0732, Val Acc: 0.6767
Epoch 9/10 | Train Loss: 1.0759, Train Acc: 0.6723 | Val Loss: 0.9990, Val Acc: 0.6873
Epoch 10/10 | Train Loss: 1.0032, Train Acc: 0.6847 | Val Loss: 0.9522, Val Acc: 0.6928
```

Run history:



Run summary:

epoch	9
training_accuracy	0.6847
training_loss	1.00324
val_accuracy	0.69283
val_loss	0.95217

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ibysoylb>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_180948-ibysoylb\logs`

```
wandb: Agent Starting Run: ez41w567 with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181030-ez41w567`

Syncing run **jolly-sweep-48** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

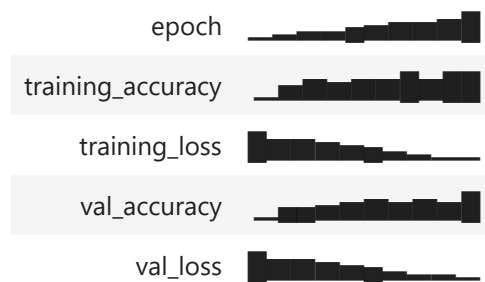
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ez41w567>

```
Epoch 1/10 | Train Loss: 2.2976, Train Acc: 0.1143 | Val Loss: 2.2216, Val Acc: 0.3278
Epoch 2/10 | Train Loss: 2.2208, Train Acc: 0.3283 | Val Loss: 2.1432, Val Acc: 0.4450
Epoch 3/10 | Train Loss: 2.1436, Train Acc: 0.4497 | Val Loss: 2.0587, Val Acc: 0.4343
Epoch 4/10 | Train Loss: 2.0581, Train Acc: 0.4395 | Val Loss: 1.9490, Val Acc: 0.4848
Epoch 5/10 | Train Loss: 1.9504, Train Acc: 0.4779 | Val Loss: 1.8280, Val Acc: 0.4993
Epoch 6/10 | Train Loss: 1.8280, Train Acc: 0.5006 | Val Loss: 1.7182, Val Acc: 0.5415
Epoch 7/10 | Train Loss: 1.7215, Train Acc: 0.5313 | Val Loss: 1.6607, Val Acc: 0.5083
Epoch 8/10 | Train Loss: 1.6664, Train Acc: 0.4974 | Val Loss: 1.5781, Val Acc: 0.5337
Epoch 9/10 | Train Loss: 1.5798, Train Acc: 0.5297 | Val Loss: 1.5179, Val Acc: 0.5153
Epoch 10/10 | Train Loss: 1.5291, Train Acc: 0.5081 | Val Loss: 1.4198, Val Acc: 0.5870
```

Run history:



Run summary:

epoch	9
training_accuracy	0.50807
training_loss	1.5291
val_accuracy	0.587
val_loss	1.41984

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ez41w567>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181030-ez41w567\logs

```
wandb: Agent Starting Run: ix13bbkm with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181052-ix13bbkm

Syncing run **fast-sweep-49** to [Weights & Biases](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw) (docs)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

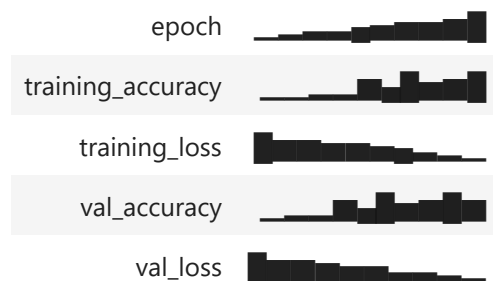
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ix13bbkm>

```
Epoch 1/10 | Train Loss: 2.2923, Train Acc: 0.1006 | Val Loss: 2.2352, Val Acc: 0.0993
Epoch 2/10 | Train Loss: 2.2349, Train Acc: 0.1020 | Val Loss: 2.1702, Val Acc: 0.1580
Epoch 3/10 | Train Loss: 2.1701, Train Acc: 0.1591 | Val Loss: 2.0892, Val Acc: 0.1855
Epoch 4/10 | Train Loss: 2.0916, Train Acc: 0.1873 | Val Loss: 2.0206, Val Acc: 0.4710
Epoch 5/10 | Train Loss: 2.0237, Train Acc: 0.4537 | Val Loss: 1.9195, Val Acc: 0.2920
Epoch 6/10 | Train Loss: 1.9250, Train Acc: 0.2874 | Val Loss: 1.8451, Val Acc: 0.5248
Epoch 7/10 | Train Loss: 1.8510, Train Acc: 0.5103 | Val Loss: 1.7280, Val Acc: 0.3957
Epoch 8/10 | Train Loss: 1.7368, Train Acc: 0.3862 | Val Loss: 1.6355, Val Acc: 0.4892
Epoch 9/10 | Train Loss: 1.6441, Train Acc: 0.4834 | Val Loss: 1.5125, Val Acc: 0.5440
Epoch 10/10 | Train Loss: 1.5237, Train Acc: 0.5337 | Val Loss: 1.4492, Val Acc: 0.4963
```

Run history:



Run summary:

epoch	9
training_accuracy	0.53369
training_loss	1.52369
val_accuracy	0.49633
val_loss	1.44925

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ix13bbkm>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_181052-ix13bbkm\logs`

```
wandb: Agent Starting Run: crxiflr8 with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: rmsprop
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181113-crxiflr8`

Syncing run **faithful-sweep-50** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

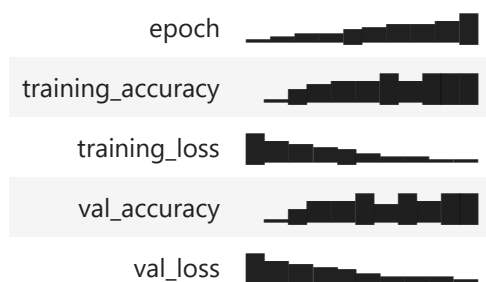
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/crxiflr8>

```
Epoch 1/10 | Train Loss: 2.3161, Train Acc: 0.0538 | Val Loss: 2.1824, Val Acc: 0.3187
Epoch 2/10 | Train Loss: 2.1826, Train Acc: 0.3171 | Val Loss: 2.0653, Val Acc: 0.4510
Epoch 3/10 | Train Loss: 2.0665, Train Acc: 0.4464 | Val Loss: 1.9268, Val Acc: 0.5622
Epoch 4/10 | Train Loss: 1.9299, Train Acc: 0.5571 | Val Loss: 1.7771, Val Acc: 0.5618
Epoch 5/10 | Train Loss: 1.7793, Train Acc: 0.5564 | Val Loss: 1.6517, Val Acc: 0.6097
Epoch 6/10 | Train Loss: 1.6605, Train Acc: 0.6040 | Val Loss: 1.5404, Val Acc: 0.5322
Epoch 7/10 | Train Loss: 1.5436, Train Acc: 0.5286 | Val Loss: 1.4363, Val Acc: 0.6000
Epoch 8/10 | Train Loss: 1.4485, Train Acc: 0.5917 | Val Loss: 1.3641, Val Acc: 0.5802
Epoch 9/10 | Train Loss: 1.3686, Train Acc: 0.5808 | Val Loss: 1.3335, Val Acc: 0.5957
Epoch 10/10 | Train Loss: 1.3448, Train Acc: 0.5908 | Val Loss: 1.2571, Val Acc: 0.5963
```

Run history:



Run summary:

epoch	9
training_accuracy	0.59076
training_loss	1.34483
val_accuracy	0.59633
val_loss	1.2571

View run **hl_3_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/crxiflr8>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181113-crxiflr8\logs

```
wandb: Agent Starting Run: 1odjh2e1 with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 64
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181129-1odjh2e1

Syncing run **serene-sweep-51** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

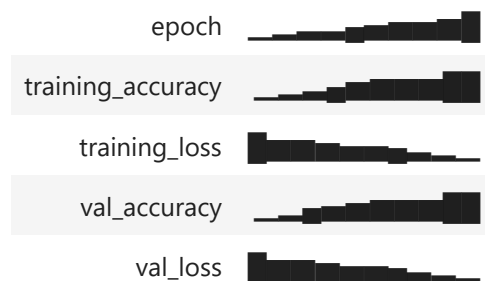
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/1odjh2el>

```
Epoch 1/10 | Train Loss: 2.3364, Train Acc: 0.1555 | Val Loss: 2.2546, Val Acc: 0.2078
Epoch 2/10 | Train Loss: 2.2548, Train Acc: 0.2055 | Val Loss: 2.1913, Val Acc: 0.2758
Epoch 3/10 | Train Loss: 2.1931, Train Acc: 0.2705 | Val Loss: 2.1208, Val Acc: 0.3690
Epoch 4/10 | Train Loss: 2.1247, Train Acc: 0.3604 | Val Loss: 2.0417, Val Acc: 0.4587
Epoch 5/10 | Train Loss: 2.0471, Train Acc: 0.4537 | Val Loss: 1.9591, Val Acc: 0.5062
Epoch 6/10 | Train Loss: 1.9640, Train Acc: 0.4982 | Val Loss: 1.8686, Val Acc: 0.5320
Epoch 7/10 | Train Loss: 1.8739, Train Acc: 0.5286 | Val Loss: 1.7732, Val Acc: 0.5505
Epoch 8/10 | Train Loss: 1.7799, Train Acc: 0.5483 | Val Loss: 1.6765, Val Acc: 0.5692
Epoch 9/10 | Train Loss: 1.6838, Train Acc: 0.5671 | Val Loss: 1.5787, Val Acc: 0.5917
Epoch 10/10 | Train Loss: 1.5862, Train Acc: 0.5893 | Val Loss: 1.4816, Val Acc: 0.6133
```

Run history:



Run summary:

epoch	9
training_accuracy	0.58928
training_loss	1.58624
val_accuracy	0.61333
val_loss	1.48158

View run **hl_3_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/1odjh2el>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_181129-1odjh2el\logs`

```
wandb: Agent Starting Run: 6qxofm2b with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nesterov
wandb:   weight_decay: 0
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181140-6qxofm2b`

Syncing run **still-sweep-52** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

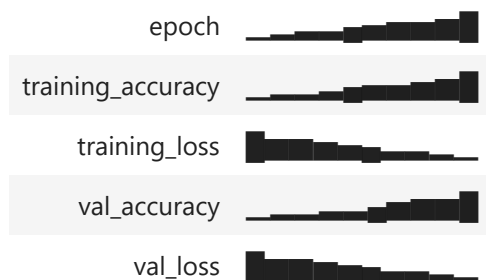
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/6qxofm2b>

```
Epoch 1/10 | Train Loss: 2.3044, Train Acc: 0.0824 | Val Loss: 2.3043, Val Acc: 0.0782
Epoch 2/10 | Train Loss: 2.3038, Train Acc: 0.0830 | Val Loss: 2.3037, Val Acc: 0.0787
Epoch 3/10 | Train Loss: 2.3031, Train Acc: 0.0834 | Val Loss: 2.3029, Val Acc: 0.0792
Epoch 4/10 | Train Loss: 2.3024, Train Acc: 0.0841 | Val Loss: 2.3022, Val Acc: 0.0797
Epoch 5/10 | Train Loss: 2.3016, Train Acc: 0.0850 | Val Loss: 2.3014, Val Acc: 0.0800
Epoch 6/10 | Train Loss: 2.3009, Train Acc: 0.0860 | Val Loss: 2.3006, Val Acc: 0.0808
Epoch 7/10 | Train Loss: 2.3001, Train Acc: 0.0868 | Val Loss: 2.2999, Val Acc: 0.0830
Epoch 8/10 | Train Loss: 2.2994, Train Acc: 0.0876 | Val Loss: 2.2991, Val Acc: 0.0840
Epoch 9/10 | Train Loss: 2.2986, Train Acc: 0.0883 | Val Loss: 2.2983, Val Acc: 0.0845
Epoch 10/10 | Train Loss: 2.2978, Train Acc: 0.0894 | Val Loss: 2.2976, Val Acc: 0.0852
```

Run history:



Run summary:

epoch	9
training_accuracy	0.08943
training_loss	2.29785
val_accuracy	0.08517
val_loss	2.29758

View run **hl_3_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/6qxofm2b>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_181140-6qxofm2b\logs`

```
wandb: Agent Starting Run: fh1ff8vf with config:
wandb: activation: tanh
wandb: batch_size: 32
wandb: epochs: 10
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: adam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181157-fh1ff8vf`

Syncing run **blooming-sweep-53** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

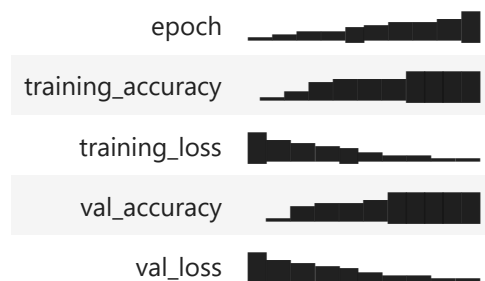
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fh1ff8vf>

```
Epoch 1/10 | Train Loss: 2.3879, Train Acc: 0.1036 | Val Loss: 2.1276, Val Acc: 0.2633
Epoch 2/10 | Train Loss: 2.1291, Train Acc: 0.2596 | Val Loss: 1.9082, Val Acc: 0.5220
Epoch 3/10 | Train Loss: 1.9099, Train Acc: 0.5208 | Val Loss: 1.7074, Val Acc: 0.5642
Epoch 4/10 | Train Loss: 1.7094, Train Acc: 0.5604 | Val Loss: 1.5322, Val Acc: 0.5913
Epoch 5/10 | Train Loss: 1.5365, Train Acc: 0.5922 | Val Loss: 1.3828, Val Acc: 0.6295
Epoch 6/10 | Train Loss: 1.3891, Train Acc: 0.6251 | Val Loss: 1.2589, Val Acc: 0.6552
Epoch 7/10 | Train Loss: 1.2647, Train Acc: 0.6543 | Val Loss: 1.1542, Val Acc: 0.6643
Epoch 8/10 | Train Loss: 1.1595, Train Acc: 0.6648 | Val Loss: 1.0664, Val Acc: 0.6708
Epoch 9/10 | Train Loss: 1.0717, Train Acc: 0.6703 | Val Loss: 0.9951, Val Acc: 0.6843
Epoch 10/10 | Train Loss: 0.9987, Train Acc: 0.6844 | Val Loss: 0.9347, Val Acc: 0.6842
```

Run history:



Run summary:

epoch	9
training_accuracy	0.68439
training_loss	0.99867
val_accuracy	0.68417
val_loss	0.93467

View run **hl_3_bs_32_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fh1ff8vf>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181157-fh1ff8vf\logs

```
wandb: Agent Starting Run: k0h6n59w with config:
wandb:   activation: tanh
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181239-k0h6n59w

Syncing run **hearty-sweep-54** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

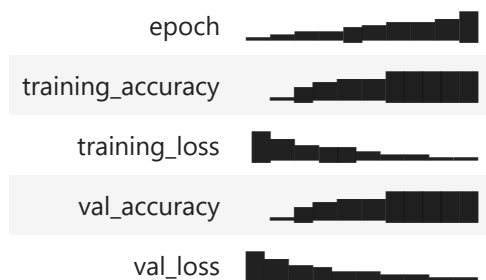
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/k0h6n59w>

```
Epoch 1/10 | Train Loss: 2.3469, Train Acc: 0.0288 | Val Loss: 2.0633, Val Acc: 0.3132
Epoch 2/10 | Train Loss: 2.0634, Train Acc: 0.3121 | Val Loss: 1.8199, Val Acc: 0.4943
Epoch 3/10 | Train Loss: 1.8207, Train Acc: 0.4915 | Val Loss: 1.6056, Val Acc: 0.5755
Epoch 4/10 | Train Loss: 1.6082, Train Acc: 0.5692 | Val Loss: 1.4197, Val Acc: 0.6328
Epoch 5/10 | Train Loss: 1.4238, Train Acc: 0.6267 | Val Loss: 1.2701, Val Acc: 0.6575
Epoch 6/10 | Train Loss: 1.2758, Train Acc: 0.6513 | Val Loss: 1.1481, Val Acc: 0.6707
Epoch 7/10 | Train Loss: 1.1530, Train Acc: 0.6668 | Val Loss: 1.0492, Val Acc: 0.6753
Epoch 8/10 | Train Loss: 1.0537, Train Acc: 0.6733 | Val Loss: 0.9693, Val Acc: 0.6877
Epoch 9/10 | Train Loss: 0.9722, Train Acc: 0.6826 | Val Loss: 0.9044, Val Acc: 0.6902
Epoch 10/10 | Train Loss: 0.9082, Train Acc: 0.6876 | Val Loss: 0.8804, Val Acc: 0.6898
```

Run history:



Run summary:

epoch	9
training_accuracy	0.68756
training_loss	0.90824
val_accuracy	0.68983
val_loss	0.88035

View run **hl_4_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/k0h6n59w>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181239-k0h6n59w\logs

```
wandb: Agent Starting Run: j7t07cxm with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 5
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181311-j7t07cxm

Syncing run **earthy-sweep-55** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

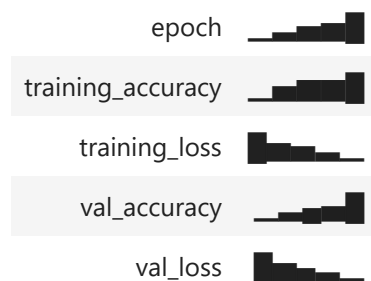
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/j7t07cxm>

```
Epoch 1/5 | Train Loss: 2.2972, Train Acc: 0.1005 | Val Loss: 2.1705, Val Acc: 0.2647
Epoch 2/5 | Train Loss: 2.1750, Train Acc: 0.2572 | Val Loss: 2.0442, Val Acc: 0.3428
Epoch 3/5 | Train Loss: 2.0537, Train Acc: 0.3331 | Val Loss: 1.9221, Val Acc: 0.3585
Epoch 4/5 | Train Loss: 1.9319, Train Acc: 0.3548 | Val Loss: 1.7895, Val Acc: 0.3963
Epoch 5/5 | Train Loss: 1.8043, Train Acc: 0.3919 | Val Loss: 1.6741, Val Acc: 0.5218
```

Run history:



Run summary:

epoch	4
training_accuracy	0.39193
training_loss	1.80429
val_accuracy	0.52183
val_loss	1.67412

View run **hl_3_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/j7t07cxm>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181311-j7t07cxm\logs

```
wandb: Agent Starting Run: 3pm6nd21 with config:
wandb:   activation: relu
wandb:   batch_size: 32
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181322-3pm6nd21

Syncing run **divine-sweep-56** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

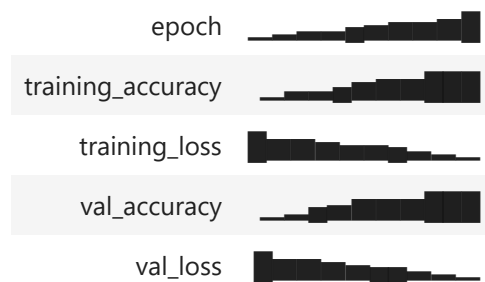
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/3pm6nd21>

Epoch 1/10		Train Loss: 2.3092,	Train Acc: 0.0930		Val Loss: 2.2166,	Val Acc: 0.2287
Epoch 2/10		Train Loss: 2.2180,	Train Acc: 0.2200		Val Loss: 2.1349,	Val Acc: 0.2933
Epoch 3/10		Train Loss: 2.1374,	Train Acc: 0.2876		Val Loss: 2.0399,	Val Acc: 0.3907
Epoch 4/10		Train Loss: 2.0437,	Train Acc: 0.3752		Val Loss: 1.9323,	Val Acc: 0.5070
Epoch 5/10		Train Loss: 1.9362,	Train Acc: 0.4966		Val Loss: 1.8107,	Val Acc: 0.5832
Epoch 6/10		Train Loss: 1.8153,	Train Acc: 0.5723		Val Loss: 1.6780,	Val Acc: 0.6027
Epoch 7/10		Train Loss: 1.6842,	Train Acc: 0.5926		Val Loss: 1.5407,	Val Acc: 0.6273
Epoch 8/10		Train Loss: 1.5477,	Train Acc: 0.6212		Val Loss: 1.4041,	Val Acc: 0.6510
Epoch 9/10		Train Loss: 1.4116,	Train Acc: 0.6457		Val Loss: 1.2747,	Val Acc: 0.6645
Epoch 10/10		Train Loss: 1.2826,	Train Acc: 0.6619		Val Loss: 1.1569,	Val Acc: 0.6693

Run history:



Run summary:

epoch	9
training_accuracy	0.66185
training_loss	1.28261
val_accuracy	0.66933
val_loss	1.15689

View run **hl_3_bs_32_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/3pm6nd21>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181322-3pm6nd21\logs

```
wandb: Agent Starting Run: zt4t17q0 with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 5
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: rmsprop
wandb: weight_decay: 0
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181338-zt4t17q0

Syncing run **expert-sweep-57** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

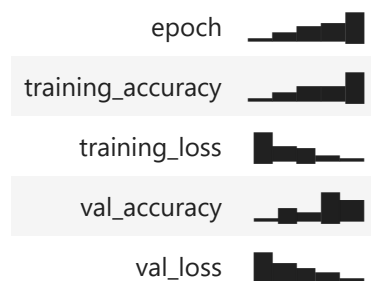
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/zt4t17q0>

```
Epoch 1/5 | Train Loss: 2.3169, Train Acc: 0.1531 | Val Loss: 1.9698, Val Acc: 0.2878
Epoch 2/5 | Train Loss: 1.9746, Train Acc: 0.2830 | Val Loss: 1.8001, Val Acc: 0.4325
Epoch 3/5 | Train Loss: 1.8032, Train Acc: 0.4271 | Val Loss: 1.6396, Val Acc: 0.3903
Epoch 4/5 | Train Loss: 1.6529, Train Acc: 0.3842 | Val Loss: 1.5080, Val Acc: 0.5870
Epoch 5/5 | Train Loss: 1.5095, Train Acc: 0.5841 | Val Loss: 1.3800, Val Acc: 0.5530
```

Run history:



Run summary:

epoch	4
training_accuracy	0.58409
training_loss	1.50951
val_accuracy	0.553
val_loss	1.38002

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/zt4t17q0>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181338-zt4t17q0\logs

```
wandb: Agent Starting Run: hl5kaxbn with config:
wandb:  activation: tanh
wandb:  batch_size: 64
wandb:  epochs: 10
wandb:  hidden_layers: 3
wandb:  hidden_size: 64
wandb:  learning_rate: 0.001
wandb:  optimizer: nadam
wandb:  weight_decay: 0
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181405-hl5kaxbn

Syncing run **ethereal-sweep-58** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

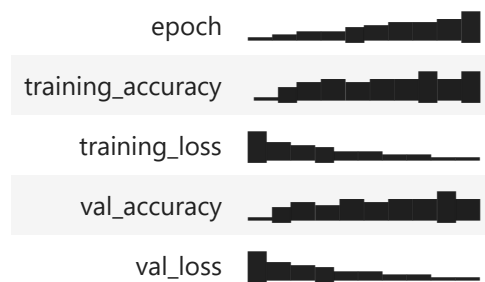
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/hl5kaxbn>

Epoch 1/10		Train Loss: 2.3097,	Train Acc: 0.0787		Val Loss: 2.0849,	Val Acc: 0.2993
Epoch 2/10		Train Loss: 2.0840,	Train Acc: 0.2977		Val Loss: 1.9044,	Val Acc: 0.4585
Epoch 3/10		Train Loss: 1.9042,	Train Acc: 0.4607		Val Loss: 1.7488,	Val Acc: 0.5052
Epoch 4/10		Train Loss: 1.7526,	Train Acc: 0.5021		Val Loss: 1.6435,	Val Acc: 0.4910
Epoch 5/10		Train Loss: 1.6462,	Train Acc: 0.4927		Val Loss: 1.5717,	Val Acc: 0.5705
Epoch 6/10		Train Loss: 1.5773,	Train Acc: 0.5647		Val Loss: 1.4988,	Val Acc: 0.5240
Epoch 7/10		Train Loss: 1.5021,	Train Acc: 0.5274		Val Loss: 1.4531,	Val Acc: 0.5923
Epoch 8/10		Train Loss: 1.4593,	Train Acc: 0.5864		Val Loss: 1.3930,	Val Acc: 0.5602
Epoch 9/10		Train Loss: 1.3961,	Train Acc: 0.5596		Val Loss: 1.3532,	Val Acc: 0.6178
Epoch 10/10		Train Loss: 1.3593,	Train Acc: 0.6139		Val Loss: 1.3056,	Val Acc: 0.5938

Run history:



Run summary:

epoch	9
training_accuracy	0.61393
training_loss	1.35933
val_accuracy	0.59383
val_loss	1.30556

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/hl5kaxbn>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181405-hl5kaxbn\logs

```
wandb: Agent Starting Run: x9fywjz5 with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: adam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181432-x9fywjz5

Syncing run **comfy-sweep-59** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

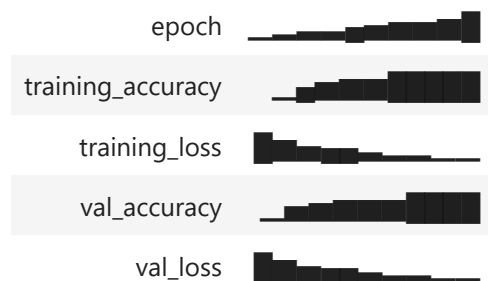
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/x9fywjz5>

```
Epoch 1/10 | Train Loss: 2.3676, Train Acc: 0.0879 | Val Loss: 2.0888, Val Acc: 0.3663
Epoch 2/10 | Train Loss: 2.0905, Train Acc: 0.3664 | Val Loss: 1.8591, Val Acc: 0.5327
Epoch 3/10 | Train Loss: 1.8635, Train Acc: 0.5207 | Val Loss: 1.6519, Val Acc: 0.6138
Epoch 4/10 | Train Loss: 1.6586, Train Acc: 0.6114 | Val Loss: 1.4782, Val Acc: 0.6460
Epoch 5/10 | Train Loss: 1.4860, Train Acc: 0.6379 | Val Loss: 1.3373, Val Acc: 0.6577
Epoch 6/10 | Train Loss: 1.3453, Train Acc: 0.6525 | Val Loss: 1.2236, Val Acc: 0.6663
Epoch 7/10 | Train Loss: 1.2311, Train Acc: 0.6618 | Val Loss: 1.1285, Val Acc: 0.6705
Epoch 8/10 | Train Loss: 1.1354, Train Acc: 0.6665 | Val Loss: 1.0476, Val Acc: 0.6762
Epoch 9/10 | Train Loss: 1.0538, Train Acc: 0.6728 | Val Loss: 0.9779, Val Acc: 0.6835
Epoch 10/10 | Train Loss: 0.9833, Train Acc: 0.6824 | Val Loss: 0.9182, Val Acc: 0.6938
```

Run history:



Run summary:

epoch	9
training_accuracy	0.68243
training_loss	0.98335
val_accuracy	0.69383
val_loss	0.9182

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/x9fywjz5>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_181432-x9fywjz5\logs`

```
wandb: Agent Starting Run: z6gloi5 with config:
wandb:   activation: sigmoid
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: rmsprop
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181515-z6gloi5`

Syncing run **dulcet-sweep-60** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

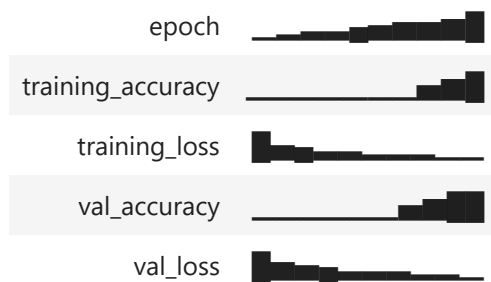
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/z6gloi5>

```
Epoch 1/10 | Train Loss: 2.4749, Train Acc: 0.1007 | Val Loss: 2.3856, Val Acc: 0.0933
Epoch 2/10 | Train Loss: 2.3848, Train Acc: 0.1007 | Val Loss: 2.3407, Val Acc: 0.0933
Epoch 3/10 | Train Loss: 2.3399, Train Acc: 0.1007 | Val Loss: 2.3132, Val Acc: 0.0933
Epoch 4/10 | Train Loss: 2.3125, Train Acc: 0.1007 | Val Loss: 2.2952, Val Acc: 0.0933
Epoch 5/10 | Train Loss: 2.2947, Train Acc: 0.1007 | Val Loss: 2.2830, Val Acc: 0.0942
Epoch 6/10 | Train Loss: 2.2828, Train Acc: 0.1017 | Val Loss: 2.2735, Val Acc: 0.1202
Epoch 7/10 | Train Loss: 2.2736, Train Acc: 0.1292 | Val Loss: 2.2645, Val Acc: 0.3698
Epoch 8/10 | Train Loss: 2.2648, Train Acc: 0.3703 | Val Loss: 2.2546, Val Acc: 0.4732
Epoch 9/10 | Train Loss: 2.2551, Train Acc: 0.4696 | Val Loss: 2.2432, Val Acc: 0.5530
Epoch 10/10 | Train Loss: 2.2439, Train Acc: 0.5486 | Val Loss: 2.2298, Val Acc: 0.5570
```

Run history:



Run summary:

epoch	9
training_accuracy	0.54859
training_loss	2.24387
val_accuracy	0.557
val_loss	2.22976

View run **hl_3_bs_64_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/z6gloi5>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181515-z6gloi5\logs

```
wandb: Agent Starting Run: dwcgz7iv with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 5
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181541-dwcgz7iv

Syncing run **serene-sweep-61** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

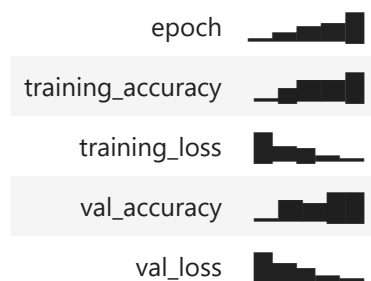
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/dwcgz7iv>

```
Epoch 1/5 | Train Loss: 2.3333, Train Acc: 0.0666 | Val Loss: 2.0306, Val Acc: 0.2445
Epoch 2/5 | Train Loss: 2.0300, Train Acc: 0.2478 | Val Loss: 1.8281, Val Acc: 0.5095
Epoch 3/5 | Train Loss: 1.8290, Train Acc: 0.5080 | Val Loss: 1.6499, Val Acc: 0.4900
Epoch 4/5 | Train Loss: 1.6561, Train Acc: 0.4820 | Val Loss: 1.5307, Val Acc: 0.5650
Epoch 5/5 | Train Loss: 1.5302, Train Acc: 0.5663 | Val Loss: 1.4042, Val Acc: 0.5673
```

Run history:



Run summary:

epoch	4
training_accuracy	0.5663
training_loss	1.53019
val_accuracy	0.56733
val_loss	1.4042

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/dwcgz7iv>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181541-dwcgz7iv\logs

```
wandb: Agent Starting Run: fm4o0ja2 with config:
wandb:   activation: tanh
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181603-fm4o0ja2

Syncing run **summer-sweep-62** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

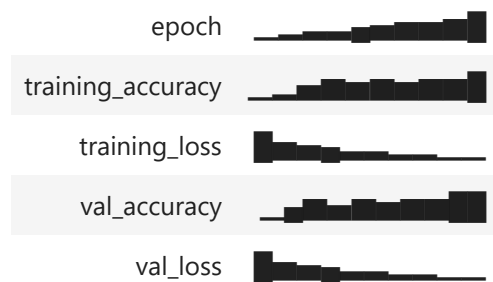
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fm4o0ja2>

Epoch 1/10		Train Loss: 2.3583,	Train Acc: 0.1376		Val Loss: 2.0855,	Val Acc: 0.2122
Epoch 2/10		Train Loss: 2.0957,	Train Acc: 0.2103		Val Loss: 1.8644,	Val Acc: 0.4080
Epoch 3/10		Train Loss: 1.8633,	Train Acc: 0.4139		Val Loss: 1.6888,	Val Acc: 0.5510
Epoch 4/10		Train Loss: 1.6994,	Train Acc: 0.5421		Val Loss: 1.5564,	Val Acc: 0.4688
Epoch 5/10		Train Loss: 1.5568,	Train Acc: 0.4751		Val Loss: 1.4344,	Val Acc: 0.5758
Epoch 6/10		Train Loss: 1.4448,	Train Acc: 0.5675		Val Loss: 1.3559,	Val Acc: 0.5193
Epoch 7/10		Train Loss: 1.3581,	Train Acc: 0.5220		Val Loss: 1.2653,	Val Acc: 0.5995
Epoch 8/10		Train Loss: 1.2742,	Train Acc: 0.5963		Val Loss: 1.2152,	Val Acc: 0.5800
Epoch 9/10		Train Loss: 1.2173,	Train Acc: 0.5769		Val Loss: 1.1490,	Val Acc: 0.6358
Epoch 10/10		Train Loss: 1.1586,	Train Acc: 0.6317		Val Loss: 1.1223,	Val Acc: 0.6327

Run history:



Run summary:

epoch	9
training_accuracy	0.63167
training_loss	1.15857
val_accuracy	0.63267
val_loss	1.12233

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fm4o0ja2>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181603-fm4o0ja2\logs

```
wandb: Agent Starting Run: 2ryzjaka with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: adam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181646-2ryzjaka

Syncing run **polar-sweep-63** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

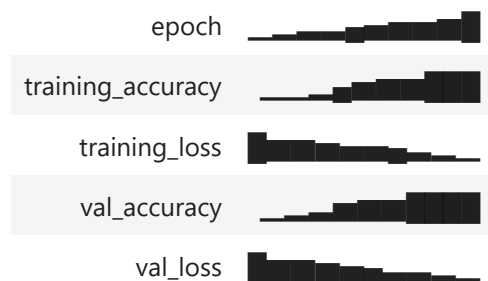
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/2ryzjaka>

```
Epoch 1/10 | Train Loss: 2.3079, Train Acc: 0.1249 | Val Loss: 2.2076, Val Acc: 0.1387
Epoch 2/10 | Train Loss: 2.2076, Train Acc: 0.1418 | Val Loss: 2.1193, Val Acc: 0.2002
Epoch 3/10 | Train Loss: 2.1188, Train Acc: 0.2051 | Val Loss: 2.0197, Val Acc: 0.3308
Epoch 4/10 | Train Loss: 2.0196, Train Acc: 0.3335 | Val Loss: 1.9050, Val Acc: 0.5253
Epoch 5/10 | Train Loss: 1.9056, Train Acc: 0.5191 | Val Loss: 1.7766, Val Acc: 0.6002
Epoch 6/10 | Train Loss: 1.7777, Train Acc: 0.6011 | Val Loss: 1.6367, Val Acc: 0.6222
Epoch 7/10 | Train Loss: 1.6385, Train Acc: 0.6237 | Val Loss: 1.4946, Val Acc: 0.6558
Epoch 8/10 | Train Loss: 1.4972, Train Acc: 0.6534 | Val Loss: 1.3576, Val Acc: 0.6710
Epoch 9/10 | Train Loss: 1.3611, Train Acc: 0.6686 | Val Loss: 1.2308, Val Acc: 0.6795
Epoch 10/10 | Train Loss: 1.2352, Train Acc: 0.6752 | Val Loss: 1.1198, Val Acc: 0.6877
```

Run history:



Run summary:

epoch	9
training_accuracy	0.67524
training_loss	1.2352
val_accuracy	0.68767
val_loss	1.11977

View run **hl_3_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/2ryzjaka>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_181646-2ryzjaka\logs`

```
wandb: Agent Starting Run: 0sezgkd0 with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181702-0sezgkd0`

Syncing run **dazzling-sweep-64** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

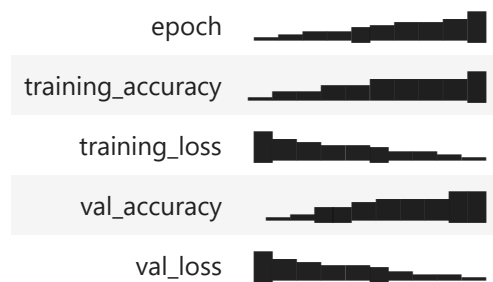
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/0sezgkd0>

```
Epoch 1/10 | Train Loss: 2.3087, Train Acc: 0.0896 | Val Loss: 2.2140, Val Acc: 0.1970
Epoch 2/10 | Train Loss: 2.2143, Train Acc: 0.2004 | Val Loss: 2.1176, Val Acc: 0.2382
Epoch 3/10 | Train Loss: 2.1193, Train Acc: 0.2330 | Val Loss: 2.0060, Val Acc: 0.3887
Epoch 4/10 | Train Loss: 2.0074, Train Acc: 0.3847 | Val Loss: 1.8968, Val Acc: 0.3610
Epoch 5/10 | Train Loss: 1.9035, Train Acc: 0.3561 | Val Loss: 1.8305, Val Acc: 0.4762
Epoch 6/10 | Train Loss: 1.8303, Train Acc: 0.4817 | Val Loss: 1.7164, Val Acc: 0.5152
Epoch 7/10 | Train Loss: 1.7277, Train Acc: 0.5047 | Val Loss: 1.6654, Val Acc: 0.5235
Epoch 8/10 | Train Loss: 1.6659, Train Acc: 0.5279 | Val Loss: 1.5627, Val Acc: 0.5458
Epoch 9/10 | Train Loss: 1.5758, Train Acc: 0.5366 | Val Loss: 1.4864, Val Acc: 0.5785
Epoch 10/10 | Train Loss: 1.4881, Train Acc: 0.5786 | Val Loss: 1.3990, Val Acc: 0.5848
```

Run history:



Run summary:

epoch	9
training_accuracy	0.57865
training_loss	1.48813
val_accuracy	0.58483
val_loss	1.39903

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/0sezgkd0>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_181702-0sezgkd0\logs`

```
wandb: Agent Starting Run: kf55x9jn with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 4
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181723-kf55x9jn`

Syncing run **comfy-sweep-65** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

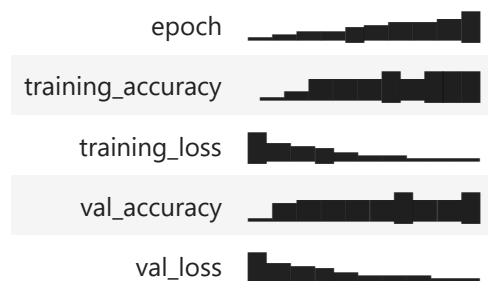
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/kf55x9jn>

```
Epoch 1/10 | Train Loss: 2.2756, Train Acc: 0.1442 | Val Loss: 1.9862, Val Acc: 0.2730
Epoch 2/10 | Train Loss: 1.9862, Train Acc: 0.2759 | Val Loss: 1.7678, Val Acc: 0.5325
Epoch 3/10 | Train Loss: 1.7753, Train Acc: 0.5355 | Val Loss: 1.6116, Val Acc: 0.5775
Epoch 4/10 | Train Loss: 1.6163, Train Acc: 0.5685 | Val Loss: 1.4800, Val Acc: 0.5813
Epoch 5/10 | Train Loss: 1.4892, Train Acc: 0.5815 | Val Loss: 1.3878, Val Acc: 0.6145
Epoch 6/10 | Train Loss: 1.3936, Train Acc: 0.6084 | Val Loss: 1.2983, Val Acc: 0.5977
Epoch 7/10 | Train Loss: 1.3105, Train Acc: 0.5934 | Val Loss: 1.2353, Val Acc: 0.6417
Epoch 8/10 | Train Loss: 1.2397, Train Acc: 0.6349 | Val Loss: 1.1782, Val Acc: 0.6120
Epoch 9/10 | Train Loss: 1.1936, Train Acc: 0.6088 | Val Loss: 1.1702, Val Acc: 0.6052
Epoch 10/10 | Train Loss: 1.1683, Train Acc: 0.6080 | Val Loss: 1.1127, Val Acc: 0.6198
```

Run history:



Run summary:

epoch	9
training_accuracy	0.60796
training_loss	1.16833
val_accuracy	0.61983
val_loss	1.11269

View run **hl_4_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/kf55x9jn>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181723-kf55x9jn\logs

```
wandb: Agent Starting Run: 3lxaegnd with config:
wandb:   activation: sigmoid
wandb:   batch_size: 64
wandb:   epochs: 5
wandb:   hidden_layers: 4
wandb:   hidden_size: 64
wandb:   learning_rate: 0.001
wandb:   optimizer: nesterov
wandb:   weight_decay: 0
wandb:   weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181812-3lxaegnd

Syncing run **rare-sweep-66** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

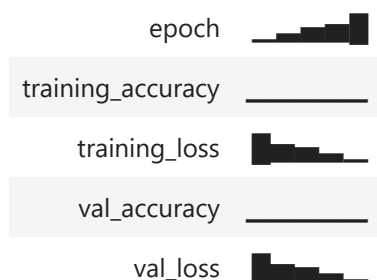
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/3lxaegnd>

```
Epoch 1/5 | Train Loss: 2.3035, Train Acc: 0.1002 | Val Loss: 2.3034, Val Acc: 0.0983
Epoch 2/5 | Train Loss: 2.3035, Train Acc: 0.1002 | Val Loss: 2.3034, Val Acc: 0.0983
Epoch 3/5 | Train Loss: 2.3035, Train Acc: 0.1002 | Val Loss: 2.3034, Val Acc: 0.0983
Epoch 4/5 | Train Loss: 2.3035, Train Acc: 0.1002 | Val Loss: 2.3034, Val Acc: 0.0983
Epoch 5/5 | Train Loss: 2.3034, Train Acc: 0.1002 | Val Loss: 2.3034, Val Acc: 0.0983
```

Run history:



Run summary:

epoch	4
training_accuracy	0.10019
training_loss	2.30345
val_accuracy	0.09833
val_loss	2.30336

View run **hl_4_bs_64_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/3lxaegnd>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181812-3lxaegnd\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: mxylkdc5 with config:  
wandb:  activation: tanh  
wandb:  batch_size: 64  
wandb:  epochs: 10  
wandb:  hidden_layers: 4  
wandb:  hidden_size: 128  
wandb:  learning_rate: 0.001  
wandb:  optimizer: nadam  
wandb:  weight_decay: 0.5  
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181832-mxylkdc5

Syncing run **visionary-sweep-67** to Weights & Biases (docs)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/mxylkdc5>

Epoch 1/10 | Train Loss: 2.3458, Train Acc: 0.0552 | Val Loss: 1.9853, Val Acc: 0.2942

Epoch 2/10 | Train Loss: 1.9895, Train Acc: 0.2950 | Val Loss: 1.7604, Val Acc: 0.4578

Epoch 3/10 | Train Loss: 1.7669, Train Acc: 0.4551 | Val Loss: 1.6003, Val Acc: 0.5185

Epoch 4/10 | Train Loss: 1.6108, Train Acc: 0.5104 | Val Loss: 1.5002, Val Acc: 0.4675

Epoch 5/10 | Train Loss: 1.5074, Train Acc: 0.4639 | Val Loss: 1.4027, Val Acc: 0.5288

Epoch 6/10 | Train Loss: 1.4162, Train Acc: 0.5248 | Val Loss: 1.3278, Val Acc: 0.5367

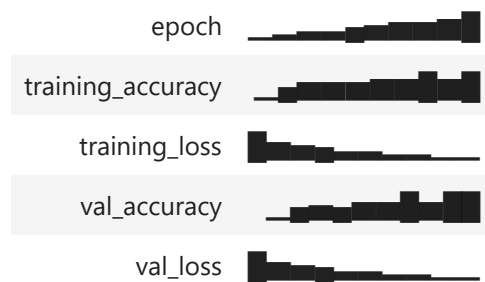
Epoch 7/10 | Train Loss: 1.3368, Train Acc: 0.5298 | Val Loss: 1.2597, Val Acc: 0.6235

Epoch 8/10 | Train Loss: 1.2707, Train Acc: 0.6206 | Val Loss: 1.2021, Val Acc: 0.5670

Epoch 9/10 | Train Loss: 1.2103, Train Acc: 0.5642 | Val Loss: 1.1472, Val Acc: 0.6453

Epoch 10/10 | Train Loss: 1.1555, Train Acc: 0.6422 | Val Loss: 1.0949, Val Acc: 0.6243

Run history:



Run summary:

epoch	9
training_accuracy	0.64222
training_loss	1.15549
val_accuracy	0.62433
val_loss	1.09492

View run **hl_4_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/mxylkdc5>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_181832-mxylkdc5\logs`

```
wandb: Agent Starting Run: huah52e9 with config:
wandb: activation: tanh
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 4
wandb: hidden_size: 64
wandb: learning_rate: 0.001
wandb: optimizer: adam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181926-huah52e9`

Syncing run **worldly-sweep-68** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

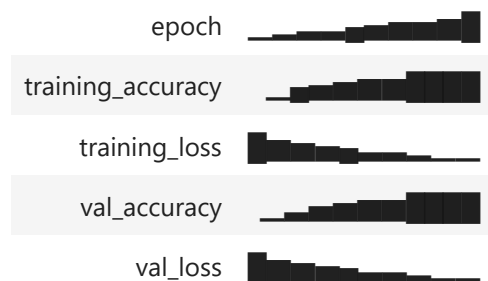
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/huah52e9>

```
Epoch 1/10 | Train Loss: 2.3183, Train Acc: 0.0514 | Val Loss: 2.1415, Val Acc: 0.3235
Epoch 2/10 | Train Loss: 2.1423, Train Acc: 0.3190 | Val Loss: 2.0013, Val Acc: 0.4268
Epoch 3/10 | Train Loss: 2.0010, Train Acc: 0.4281 | Val Loss: 1.8705, Val Acc: 0.4963
Epoch 4/10 | Train Loss: 1.8713, Train Acc: 0.5000 | Val Loss: 1.7474, Val Acc: 0.5547
Epoch 5/10 | Train Loss: 1.7497, Train Acc: 0.5547 | Val Loss: 1.6381, Val Acc: 0.5988
Epoch 6/10 | Train Loss: 1.6423, Train Acc: 0.5946 | Val Loss: 1.5441, Val Acc: 0.6265
Epoch 7/10 | Train Loss: 1.5495, Train Acc: 0.6196 | Val Loss: 1.4604, Val Acc: 0.6463
Epoch 8/10 | Train Loss: 1.4664, Train Acc: 0.6353 | Val Loss: 1.3856, Val Acc: 0.6543
Epoch 9/10 | Train Loss: 1.3923, Train Acc: 0.6430 | Val Loss: 1.3179, Val Acc: 0.6610
Epoch 10/10 | Train Loss: 1.3251, Train Acc: 0.6527 | Val Loss: 1.2579, Val Acc: 0.6683
```

Run history:



Run summary:

epoch	9
training_accuracy	0.6527
training_loss	1.32509
val_accuracy	0.66833
val_loss	1.25789

View run **hl_4_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/huah52e9>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_181926-huah52e9\logs

```
wandb: Agent Starting Run: ww8m0gzh with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_181958-ww8m0gzh

Syncing run **solar-sweep-69** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

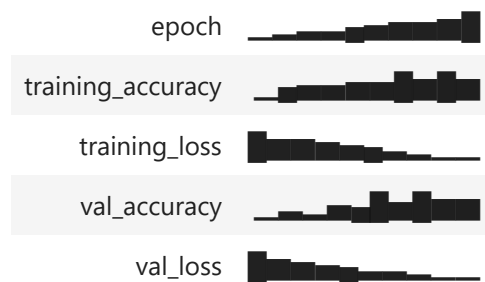
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ww8m0gzh>

```
Epoch 1/10 | Train Loss: 2.2987, Train Acc: 0.1727 | Val Loss: 2.2118, Val Acc: 0.3445
Epoch 2/10 | Train Loss: 2.2110, Train Acc: 0.3395 | Val Loss: 2.1129, Val Acc: 0.4200
Epoch 3/10 | Train Loss: 2.1114, Train Acc: 0.4261 | Val Loss: 1.9976, Val Acc: 0.3967
Epoch 4/10 | Train Loss: 1.9961, Train Acc: 0.4071 | Val Loss: 1.8687, Val Acc: 0.5165
Epoch 5/10 | Train Loss: 1.8689, Train Acc: 0.5187 | Val Loss: 1.7433, Val Acc: 0.4713
Epoch 6/10 | Train Loss: 1.7439, Train Acc: 0.4736 | Val Loss: 1.5980, Val Acc: 0.6415
Epoch 7/10 | Train Loss: 1.6022, Train Acc: 0.6349 | Val Loss: 1.4920, Val Acc: 0.5595
Epoch 8/10 | Train Loss: 1.4970, Train Acc: 0.5545 | Val Loss: 1.4187, Val Acc: 0.6208
Epoch 9/10 | Train Loss: 1.4234, Train Acc: 0.6198 | Val Loss: 1.3502, Val Acc: 0.5860
Epoch 10/10 | Train Loss: 1.3617, Train Acc: 0.5790 | Val Loss: 1.2857, Val Acc: 0.6013
```

Run history:



Run summary:

epoch	9
training_accuracy	0.57904
training_loss	1.36172
val_accuracy	0.60133
val_loss	1.28567

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ww8m0gzh>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_181958-ww8m0gzh\logs`

```
wandb: Agent Starting Run: t0o3yac0 with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 5
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182020-t0o3yac0`

Syncing run **rare-sweep-70** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

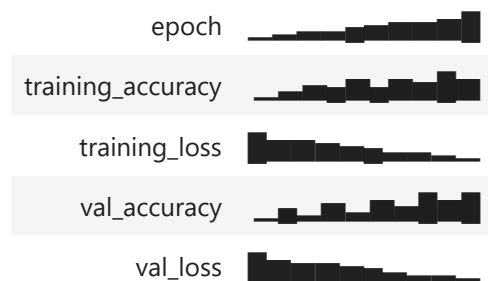
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/t0o3yac0>

```
Epoch 1/10 | Train Loss: 2.3045, Train Acc: 0.0695 | Val Loss: 2.2337, Val Acc: 0.1912
Epoch 2/10 | Train Loss: 2.2343, Train Acc: 0.1863 | Val Loss: 2.1514, Val Acc: 0.3537
Epoch 3/10 | Train Loss: 2.1513, Train Acc: 0.3505 | Val Loss: 2.0604, Val Acc: 0.2507
Epoch 4/10 | Train Loss: 2.0636, Train Acc: 0.2529 | Val Loss: 1.9826, Val Acc: 0.4603
Epoch 5/10 | Train Loss: 1.9818, Train Acc: 0.4556 | Val Loss: 1.9011, Val Acc: 0.2852
Epoch 6/10 | Train Loss: 1.9061, Train Acc: 0.2836 | Val Loss: 1.8096, Val Acc: 0.4935
Epoch 7/10 | Train Loss: 1.8104, Train Acc: 0.4890 | Val Loss: 1.7249, Val Acc: 0.4332
Epoch 8/10 | Train Loss: 1.7323, Train Acc: 0.4270 | Val Loss: 1.6308, Val Acc: 0.5487
Epoch 9/10 | Train Loss: 1.6329, Train Acc: 0.5444 | Val Loss: 1.5509, Val Acc: 0.4995
Epoch 10/10 | Train Loss: 1.5628, Train Acc: 0.4899 | Val Loss: 1.4708, Val Acc: 0.5687
```

Run history:



Run summary:

epoch	9
training_accuracy	0.48985
training_loss	1.56275
val_accuracy	0.56867
val_loss	1.47084

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/t0o3yac0>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182020-t0o3yac0\logs`

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: bkk3v0xu with config:  
wandb:   activation: relu  
wandb:   batch_size: 64  
wandb:   epochs: 10  
wandb:   hidden_layers: 4  
wandb:   hidden_size: 128  
wandb:   learning_rate: 0.001  
wandb:   optimizer: adam  
wandb:   weight_decay: 0.0005  
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182052-bkk3v0xu`

Syncing run **fresh-sweep-71** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

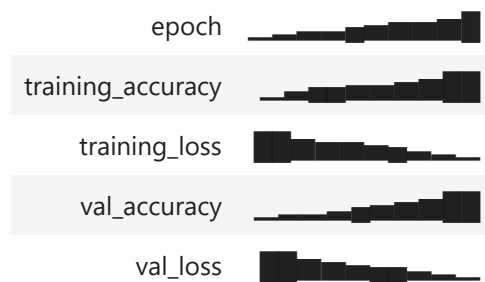
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bkk3v0xu>

```
Epoch 1/10 | Train Loss: 2.3041, Train Acc: 0.1011 | Val Loss: 2.2346, Val Acc: 0.2490  
Epoch 2/10 | Train Loss: 2.2347, Train Acc: 0.2451 | Val Loss: 2.1581, Val Acc: 0.3038  
Epoch 3/10 | Train Loss: 2.1579, Train Acc: 0.3055 | Val Loss: 2.0651, Val Acc: 0.3255  
Epoch 4/10 | Train Loss: 2.0649, Train Acc: 0.3257 | Val Loss: 1.9532, Val Acc: 0.3660  
Epoch 5/10 | Train Loss: 1.9536, Train Acc: 0.3656 | Val Loss: 1.8239, Val Acc: 0.4265  
Epoch 6/10 | Train Loss: 1.8251, Train Acc: 0.4274 | Val Loss: 1.6837, Val Acc: 0.4960  
Epoch 7/10 | Train Loss: 1.6852, Train Acc: 0.5030 | Val Loss: 1.5392, Val Acc: 0.5522  
Epoch 8/10 | Train Loss: 1.5413, Train Acc: 0.5563 | Val Loss: 1.3965, Val Acc: 0.6018  
Epoch 9/10 | Train Loss: 1.3990, Train Acc: 0.6012 | Val Loss: 1.2569, Val Acc: 0.6265  
Epoch 10/10 | Train Loss: 1.2602, Train Acc: 0.6260 | Val Loss: 1.1335, Val Acc: 0.6547
```

Run history:



Run summary:

epoch	9
training_accuracy	0.62602
training_loss	1.26024
val_accuracy	0.65467
val_loss	1.13355

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bkk3v0xu>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182052-bkk3v0xu\logs

```
wandb: Agent Starting Run: rdv23oy1 with config:
wandb: activation: relu
wandb: batch_size: 16
wandb: epochs: 5
wandb: hidden_layers: 3
wandb: hidden_size: 64
wandb: learning_rate: 0.001
wandb: optimizer: sgd
wandb: weight_decay: 0
wandb: weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182114-rdv23oy1

Syncing run **glorious-sweep-72** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

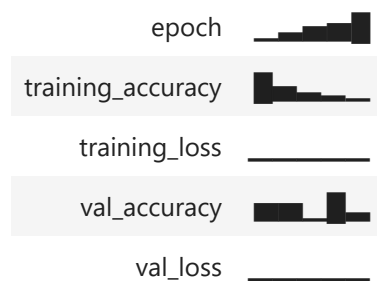
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/rdv23oy1>

```
Epoch 1/5 | Train Loss: 2.3026, Train Acc: 0.0543 | Val Loss: 2.3026, Val Acc: 0.0525
Epoch 2/5 | Train Loss: 2.3026, Train Acc: 0.0535 | Val Loss: 2.3026, Val Acc: 0.0525
Epoch 3/5 | Train Loss: 2.3026, Train Acc: 0.0529 | Val Loss: 2.3026, Val Acc: 0.0518
Epoch 4/5 | Train Loss: 2.3026, Train Acc: 0.0527 | Val Loss: 2.3026, Val Acc: 0.0528
Epoch 5/5 | Train Loss: 2.3026, Train Acc: 0.0524 | Val Loss: 2.3026, Val Acc: 0.0522
```

Run history:



Run summary:

epoch	4
training_accuracy	0.05237
training_loss	2.30259
val_accuracy	0.05217
val_loss	2.30259

View run **hl_3_bs_16_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/rdv23oy1>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182114-rdv23oy1\logs

```
wandb: Agent Starting Run: 5e6z29u0 with config:
wandb:   activation: relu
wandb:   batch_size: 32
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 64
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182125-5e6z29u0

Syncing run **mild-sweep-73** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

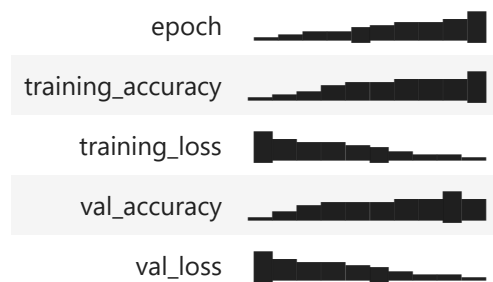
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/5e6z29u0>

```
Epoch 1/10 | Train Loss: 2.2925, Train Acc: 0.0997 | Val Loss: 2.2040, Val Acc: 0.1440
Epoch 2/10 | Train Loss: 2.2031, Train Acc: 0.1541 | Val Loss: 2.1265, Val Acc: 0.2690
Epoch 3/10 | Train Loss: 2.1256, Train Acc: 0.2778 | Val Loss: 2.0405, Val Acc: 0.3798
Epoch 4/10 | Train Loss: 2.0400, Train Acc: 0.3819 | Val Loss: 1.9501, Val Acc: 0.4665
Epoch 5/10 | Train Loss: 1.9491, Train Acc: 0.4650 | Val Loss: 1.8573, Val Acc: 0.4967
Epoch 6/10 | Train Loss: 1.8581, Train Acc: 0.4943 | Val Loss: 1.7636, Val Acc: 0.5138
Epoch 7/10 | Train Loss: 1.7631, Train Acc: 0.5160 | Val Loss: 1.6752, Val Acc: 0.5500
Epoch 8/10 | Train Loss: 1.6784, Train Acc: 0.5515 | Val Loss: 1.5938, Val Acc: 0.5167
Epoch 9/10 | Train Loss: 1.5935, Train Acc: 0.5233 | Val Loss: 1.5173, Val Acc: 0.6152
Epoch 10/10 | Train Loss: 1.5224, Train Acc: 0.6122 | Val Loss: 1.4437, Val Acc: 0.5528
```

Run history:



Run summary:

epoch	9
training_accuracy	0.61219
training_loss	1.52236
val_accuracy	0.55283
val_loss	1.44374

View run **hl_3_bs_32_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/5e6z29u0>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182125-5e6z29u0\logs

```
wandb: Agent Starting Run: q09hskhr with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 4
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182141-q09hskhr

Syncing run **playful-sweep-74** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

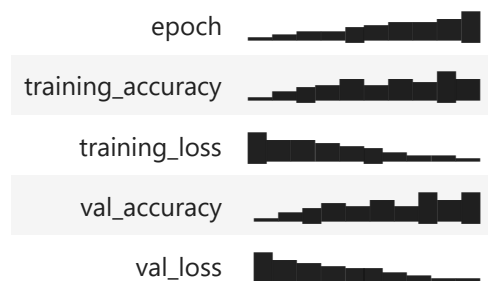
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/q09hskhr>

```
Epoch 1/10 | Train Loss: 2.2897, Train Acc: 0.1648 | Val Loss: 2.2098, Val Acc: 0.2510
Epoch 2/10 | Train Loss: 2.2110, Train Acc: 0.2534 | Val Loss: 2.1229, Val Acc: 0.3428
Epoch 3/10 | Train Loss: 2.1238, Train Acc: 0.3414 | Val Loss: 2.0145, Val Acc: 0.3665
Epoch 4/10 | Train Loss: 2.0179, Train Acc: 0.3612 | Val Loss: 1.8950, Val Acc: 0.4945
Epoch 5/10 | Train Loss: 1.8978, Train Acc: 0.4913 | Val Loss: 1.7785, Val Acc: 0.4155
Epoch 6/10 | Train Loss: 1.7852, Train Acc: 0.4130 | Val Loss: 1.7360, Val Acc: 0.5110
Epoch 7/10 | Train Loss: 1.7364, Train Acc: 0.5099 | Val Loss: 1.6346, Val Acc: 0.4475
Epoch 8/10 | Train Loss: 1.6450, Train Acc: 0.4446 | Val Loss: 1.5848, Val Acc: 0.5577
Epoch 9/10 | Train Loss: 1.5853, Train Acc: 0.5560 | Val Loss: 1.4851, Val Acc: 0.5293
Epoch 10/10 | Train Loss: 1.4973, Train Acc: 0.5225 | Val Loss: 1.4398, Val Acc: 0.5735
```

Run history:



Run summary:

epoch	9
training_accuracy	0.52254
training_loss	1.49725
val_accuracy	0.5735
val_loss	1.4398

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/q09hskhr>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182141-q09hskhr\logs`

```
wandb: Agent Starting Run: oqjmdhsi with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182203-oqjmdhsi`

Syncing run **cosmic-sweep-75** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

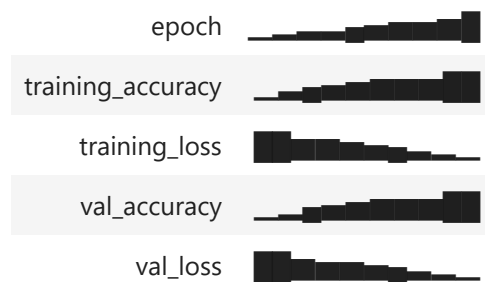
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/oqjmdhsi>

```
Epoch 1/10 | Train Loss: 2.3173, Train Acc: 0.0740 | Val Loss: 2.2505, Val Acc: 0.2145
Epoch 2/10 | Train Loss: 2.2509, Train Acc: 0.2084 | Val Loss: 2.1934, Val Acc: 0.2913
Epoch 3/10 | Train Loss: 2.1943, Train Acc: 0.2887 | Val Loss: 2.1154, Val Acc: 0.4008
Epoch 4/10 | Train Loss: 2.1166, Train Acc: 0.3941 | Val Loss: 2.0178, Val Acc: 0.4455
Epoch 5/10 | Train Loss: 2.0191, Train Acc: 0.4409 | Val Loss: 1.9015, Val Acc: 0.5233
Epoch 6/10 | Train Loss: 1.9028, Train Acc: 0.5194 | Val Loss: 1.7685, Val Acc: 0.5613
Epoch 7/10 | Train Loss: 1.7703, Train Acc: 0.5561 | Val Loss: 1.6248, Val Acc: 0.5682
Epoch 8/10 | Train Loss: 1.6273, Train Acc: 0.5666 | Val Loss: 1.4760, Val Acc: 0.6010
Epoch 9/10 | Train Loss: 1.4794, Train Acc: 0.5948 | Val Loss: 1.3298, Val Acc: 0.6272
Epoch 10/10 | Train Loss: 1.3346, Train Acc: 0.6188 | Val Loss: 1.1973, Val Acc: 0.6537
```

Run history:



Run summary:

epoch	9
training_accuracy	0.61878
training_loss	1.33458
val_accuracy	0.65367
val_loss	1.19726

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/oqjmdhsi>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182203-oqjmdhsi\logs

```
wandb: Agent Starting Run: biyixpyj with config:
wandb: activation: relu
wandb: batch_size: 32
wandb: epochs: 10
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182224-biyixpyj

Syncing run **dazzling-sweep-76** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

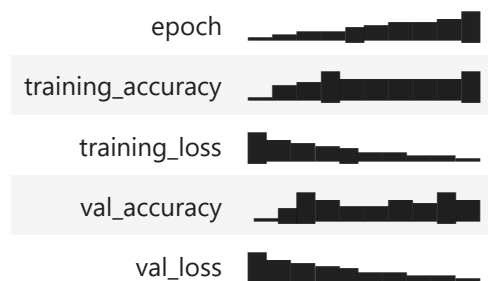
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/biyixpyj>

```
Epoch 1/10 | Train Loss: 2.3133, Train Acc: 0.1376 | Val Loss: 2.1799, Val Acc: 0.3752
Epoch 2/10 | Train Loss: 2.1784, Train Acc: 0.3776 | Val Loss: 2.0451, Val Acc: 0.4798
Epoch 3/10 | Train Loss: 2.0461, Train Acc: 0.4819 | Val Loss: 1.9104, Val Acc: 0.5760
Epoch 4/10 | Train Loss: 1.9097, Train Acc: 0.5743 | Val Loss: 1.7695, Val Acc: 0.5602
Epoch 5/10 | Train Loss: 1.7745, Train Acc: 0.5446 | Val Loss: 1.6917, Val Acc: 0.4943
Epoch 6/10 | Train Loss: 1.6889, Train Acc: 0.4935 | Val Loss: 1.5735, Val Acc: 0.5037
Epoch 7/10 | Train Loss: 1.5830, Train Acc: 0.4919 | Val Loss: 1.4975, Val Acc: 0.5435
Epoch 8/10 | Train Loss: 1.4945, Train Acc: 0.5484 | Val Loss: 1.4038, Val Acc: 0.5395
Epoch 9/10 | Train Loss: 1.4158, Train Acc: 0.5285 | Val Loss: 1.3468, Val Acc: 0.5880
Epoch 10/10 | Train Loss: 1.3437, Train Acc: 0.5858 | Val Loss: 1.2744, Val Acc: 0.5572
```

Run history:



Run summary:

epoch	9
training_accuracy	0.58581
training_loss	1.34367
val_accuracy	0.55717
val_loss	1.27438

View run **hl_3_bs_32_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/biyixpyj>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182224-biyixpyj\logs`

```
wandb: Agent Starting Run: apnrktbv with config:
wandb:   activation: tanh
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182246-apnrktbv`

Syncing run **royal-sweep-77** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

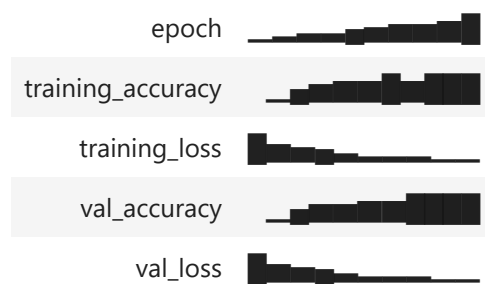
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/apnrktbv>

```
Epoch 1/10 | Train Loss: 2.3779, Train Acc: 0.0915 | Val Loss: 2.0317, Val Acc: 0.3267
Epoch 2/10 | Train Loss: 2.0340, Train Acc: 0.3232 | Val Loss: 1.7932, Val Acc: 0.4628
Epoch 3/10 | Train Loss: 1.7988, Train Acc: 0.4554 | Val Loss: 1.6239, Val Acc: 0.5637
Epoch 4/10 | Train Loss: 1.6292, Train Acc: 0.5644 | Val Loss: 1.4823, Val Acc: 0.5502
Epoch 5/10 | Train Loss: 1.4900, Train Acc: 0.5523 | Val Loss: 1.3630, Val Acc: 0.6205
Epoch 6/10 | Train Loss: 1.3689, Train Acc: 0.6209 | Val Loss: 1.2807, Val Acc: 0.5972
Epoch 7/10 | Train Loss: 1.2866, Train Acc: 0.5941 | Val Loss: 1.2033, Val Acc: 0.6497
Epoch 8/10 | Train Loss: 1.2110, Train Acc: 0.6460 | Val Loss: 1.1598, Val Acc: 0.6298
Epoch 9/10 | Train Loss: 1.1616, Train Acc: 0.6326 | Val Loss: 1.1128, Val Acc: 0.6353
Epoch 10/10 | Train Loss: 1.1208, Train Acc: 0.6301 | Val Loss: 1.0826, Val Acc: 0.6412
```

Run history:



Run summary:

epoch	9
training_accuracy	0.63013
training_loss	1.1208
val_accuracy	0.64117
val_loss	1.08263

View run **hl_3_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/apnrktbv>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182246-apnrktbv\logs

```
wandb: Agent Starting Run: zpnv98tc with config:
wandb:  activation: tanh
wandb:  batch_size: 64
wandb:  epochs: 10
wandb:  hidden_layers: 3
wandb:  hidden_size: 128
wandb:  learning_rate: 0.0001
wandb:  optimizer: nadam
wandb:  weight_decay: 0.0005
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182334-zpnv98tc

Syncing run **clean-sweep-78** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

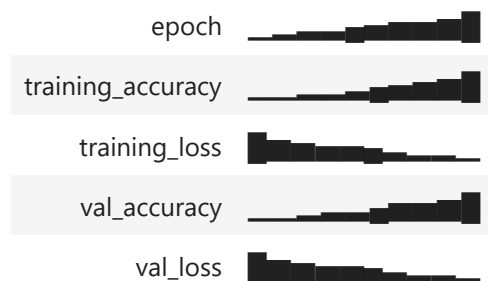
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/zpvn98tc>

```
Epoch 1/10 | Train Loss: 2.3366, Train Acc: 0.1034 | Val Loss: 2.2967, Val Acc: 0.1167
Epoch 2/10 | Train Loss: 2.2944, Train Acc: 0.1154 | Val Loss: 2.2605, Val Acc: 0.1352
Epoch 3/10 | Train Loss: 2.2582, Train Acc: 0.1326 | Val Loss: 2.2267, Val Acc: 0.1612
Epoch 4/10 | Train Loss: 2.2242, Train Acc: 0.1617 | Val Loss: 2.1940, Val Acc: 0.2012
Epoch 5/10 | Train Loss: 2.1916, Train Acc: 0.2022 | Val Loss: 2.1622, Val Acc: 0.2398
Epoch 6/10 | Train Loss: 2.1599, Train Acc: 0.2462 | Val Loss: 2.1310, Val Acc: 0.2890
Epoch 7/10 | Train Loss: 2.1289, Train Acc: 0.2929 | Val Loss: 2.1002, Val Acc: 0.3453
Epoch 8/10 | Train Loss: 2.0983, Train Acc: 0.3469 | Val Loss: 2.0698, Val Acc: 0.3947
Epoch 9/10 | Train Loss: 2.0682, Train Acc: 0.3951 | Val Loss: 2.0398, Val Acc: 0.4375
Epoch 10/10 | Train Loss: 2.0384, Train Acc: 0.4349 | Val Loss: 2.0102, Val Acc: 0.4720
```

Run history:



Run summary:

epoch	9
training_accuracy	0.43493
training_loss	2.03841
val_accuracy	0.472
val_loss	2.01015

View run [hl_3_bs_64_ac_tanh](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/zpnv98tc) at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/zpnv98tc>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182334-zpnv98tc\logs`

```
wandb: Agent Starting Run: 4uist5ro with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: rmsprop
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182416-4uist5ro`

Syncing run [sweet-sweep-79](#) to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

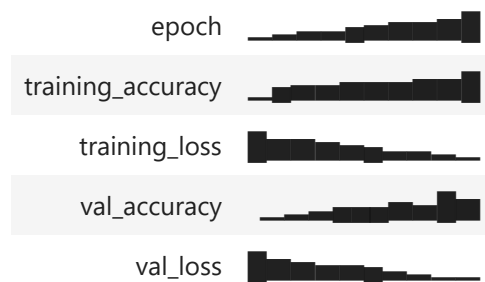
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/4uist5ro>

```
Epoch 1/10 | Train Loss: 2.3056, Train Acc: 0.1071 | Val Loss: 2.2274, Val Acc: 0.3225
Epoch 2/10 | Train Loss: 2.2299, Train Acc: 0.3152 | Val Loss: 2.1359, Val Acc: 0.3618
Epoch 3/10 | Train Loss: 2.1395, Train Acc: 0.3526 | Val Loss: 2.0365, Val Acc: 0.3907
Epoch 4/10 | Train Loss: 2.0427, Train Acc: 0.3915 | Val Loss: 1.9075, Val Acc: 0.4388
Epoch 5/10 | Train Loss: 1.9156, Train Acc: 0.4293 | Val Loss: 1.7973, Val Acc: 0.4208
Epoch 6/10 | Train Loss: 1.8063, Train Acc: 0.4188 | Val Loss: 1.6931, Val Acc: 0.4402
Epoch 7/10 | Train Loss: 1.7055, Train Acc: 0.4318 | Val Loss: 1.6460, Val Acc: 0.4930
Epoch 8/10 | Train Loss: 1.6544, Train Acc: 0.4864 | Val Loss: 1.5030, Val Acc: 0.4888
Epoch 9/10 | Train Loss: 1.5158, Train Acc: 0.4876 | Val Loss: 1.4049, Val Acc: 0.5838
Epoch 10/10 | Train Loss: 1.4172, Train Acc: 0.5735 | Val Loss: 1.3463, Val Acc: 0.5407
```


Run history:



Run summary:

epoch	9
training_accuracy	0.57348
training_loss	1.41718
val_accuracy	0.54067
val_loss	1.34627

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/4uist5ro>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182416-4uist5ro\logs

```
wandb: Agent Starting Run: g65b1198 with config:
wandb: activation: tanh
wandb: batch_size: 32
wandb: epochs: 10
wandb: hidden_layers: 4
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182438-g65b1198

Syncing run **sweepy-sweep-80** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

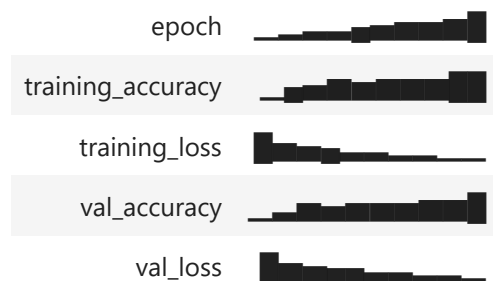
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/g65b1198>

```
Epoch 1/10 | Train Loss: 2.3568, Train Acc: 0.1024 | Val Loss: 2.0035, Val Acc: 0.2888
Epoch 2/10 | Train Loss: 2.0050, Train Acc: 0.2877 | Val Loss: 1.7760, Val Acc: 0.4140
Epoch 3/10 | Train Loss: 1.7825, Train Acc: 0.4134 | Val Loss: 1.6065, Val Acc: 0.5258
Epoch 4/10 | Train Loss: 1.6125, Train Acc: 0.5209 | Val Loss: 1.5272, Val Acc: 0.4750
Epoch 5/10 | Train Loss: 1.5342, Train Acc: 0.4755 | Val Loss: 1.4362, Val Acc: 0.5587
Epoch 6/10 | Train Loss: 1.4460, Train Acc: 0.5538 | Val Loss: 1.3675, Val Acc: 0.5407
Epoch 7/10 | Train Loss: 1.3737, Train Acc: 0.5382 | Val Loss: 1.2955, Val Acc: 0.5545
Epoch 8/10 | Train Loss: 1.3065, Train Acc: 0.5520 | Val Loss: 1.2246, Val Acc: 0.6035
Epoch 9/10 | Train Loss: 1.2297, Train Acc: 0.6071 | Val Loss: 1.1697, Val Acc: 0.6007
Epoch 10/10 | Train Loss: 1.1801, Train Acc: 0.5985 | Val Loss: 1.0956, Val Acc: 0.6542
```

Run history:



Run summary:

epoch	9
training_accuracy	0.59848
training_loss	1.18007
val_accuracy	0.65417
val_loss	1.0956

View run **hl_4_bs_32_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/g65b1198>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182438-g65b1198\logs`

```
wandb: Agent Starting Run: rmmxpdah with config:
wandb:   activation: relu
wandb:   batch_size: 32
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182536-rmmxpdah`

Syncing run **silver-sweep-81** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

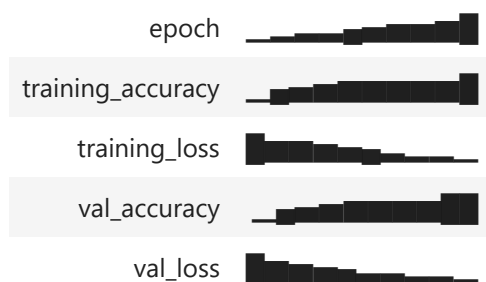
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/rmmxpdah>

```
Epoch 1/10 | Train Loss: 2.2921, Train Acc: 0.0984 | Val Loss: 2.2104, Val Acc: 0.2800
Epoch 2/10 | Train Loss: 2.2120, Train Acc: 0.2791 | Val Loss: 2.1062, Val Acc: 0.4003
Epoch 3/10 | Train Loss: 2.1058, Train Acc: 0.4031 | Val Loss: 1.9849, Val Acc: 0.4492
Epoch 4/10 | Train Loss: 1.9848, Train Acc: 0.4462 | Val Loss: 1.8572, Val Acc: 0.5290
Epoch 5/10 | Train Loss: 1.8567, Train Acc: 0.5292 | Val Loss: 1.7322, Val Acc: 0.5457
Epoch 6/10 | Train Loss: 1.7346, Train Acc: 0.5477 | Val Loss: 1.6246, Val Acc: 0.5480
Epoch 7/10 | Train Loss: 1.6258, Train Acc: 0.5412 | Val Loss: 1.5499, Val Acc: 0.5655
Epoch 8/10 | Train Loss: 1.5560, Train Acc: 0.5606 | Val Loss: 1.4778, Val Acc: 0.5542
Epoch 9/10 | Train Loss: 1.4811, Train Acc: 0.5511 | Val Loss: 1.3976, Val Acc: 0.6050
Epoch 10/10 | Train Loss: 1.4049, Train Acc: 0.6005 | Val Loss: 1.3316, Val Acc: 0.5935
```

Run history:



Run summary:

epoch	9
training_accuracy	0.60054
training_loss	1.40489
val_accuracy	0.5935
val_loss	1.33165

View run **hl_3_bs_32_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/rmmxpdah>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182536-rmmxpdah\logs`

```
wandb: Sweep Agent: Waiting for job.
wandb: Job received.
wandb: Agent Starting Run: fmr8iyrl with config:
wandb:  activation: relu
wandb:  batch_size: 64
wandb:  epochs: 10
wandb:  hidden_layers: 4
wandb:  hidden_size: 128
wandb:  learning_rate: 0.001
wandb:  optimizer: adam
wandb:  weight_decay: 0.5
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182602-fmr8iyrl`

Syncing run **warm-sweep-82** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

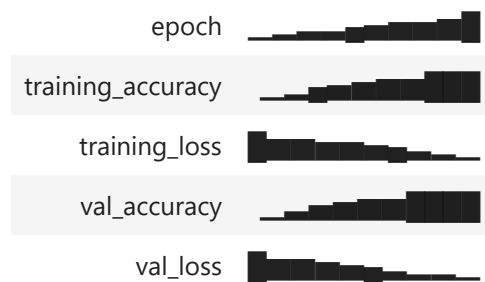
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fmr8iyrl>

Epoch 1/10		Train Loss: 2.3016,	Train Acc: 0.1077		Val Loss: 2.2164,	Val Acc: 0.1715
Epoch 2/10		Train Loss: 2.2179,	Train Acc: 0.1672		Val Loss: 2.1306,	Val Acc: 0.3510
Epoch 3/10		Train Loss: 2.1322,	Train Acc: 0.3386		Val Loss: 2.0294,	Val Acc: 0.4453
Epoch 4/10		Train Loss: 2.0309,	Train Acc: 0.4362		Val Loss: 1.9101,	Val Acc: 0.5158
Epoch 5/10		Train Loss: 1.9125,	Train Acc: 0.5076		Val Loss: 1.7738,	Val Acc: 0.5925
Epoch 6/10		Train Loss: 1.7773,	Train Acc: 0.5867		Val Loss: 1.6201,	Val Acc: 0.6337
Epoch 7/10		Train Loss: 1.6253,	Train Acc: 0.6277		Val Loss: 1.4592,	Val Acc: 0.6602
Epoch 8/10		Train Loss: 1.4647,	Train Acc: 0.6577		Val Loss: 1.3034,	Val Acc: 0.6642
Epoch 9/10		Train Loss: 1.3092,	Train Acc: 0.6590		Val Loss: 1.1645,	Val Acc: 0.6758
Epoch 10/10		Train Loss: 1.1707,	Train Acc: 0.6714		Val Loss: 1.0551,	Val Acc: 0.6623

Run history:



Run summary:

epoch	9
training_accuracy	0.67143
training_loss	1.17073
val_accuracy	0.66233
val_loss	1.05507

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/fmr8iyrl>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182602-fmr8iyrl\logs`

```
wandb: Agent Starting Run: vhw3fv3 with config:
wandb: activation: tanh
wandb: batch_size: 32
wandb: epochs: 10
wandb: hidden_layers: 3
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182625-vhw3fv3`

Syncing run **gentle-sweep-83** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

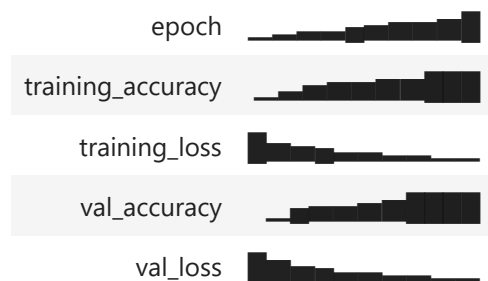
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/vhjwt3fv3>

```
Epoch 1/10 | Train Loss: 2.3323, Train Acc: 0.0965 | Val Loss: 2.0375, Val Acc: 0.2705
Epoch 2/10 | Train Loss: 2.0347, Train Acc: 0.2775 | Val Loss: 1.8516, Val Acc: 0.4113
Epoch 3/10 | Train Loss: 1.8587, Train Acc: 0.4001 | Val Loss: 1.6790, Val Acc: 0.4918
Epoch 4/10 | Train Loss: 1.6780, Train Acc: 0.4942 | Val Loss: 1.5470, Val Acc: 0.4875
Epoch 5/10 | Train Loss: 1.5571, Train Acc: 0.4809 | Val Loss: 1.4359, Val Acc: 0.5617
Epoch 6/10 | Train Loss: 1.4349, Train Acc: 0.5585 | Val Loss: 1.3336, Val Acc: 0.5638
Epoch 7/10 | Train Loss: 1.3445, Train Acc: 0.5582 | Val Loss: 1.2613, Val Acc: 0.6177
Epoch 8/10 | Train Loss: 1.2607, Train Acc: 0.6159 | Val Loss: 1.1857, Val Acc: 0.6237
Epoch 9/10 | Train Loss: 1.1968, Train Acc: 0.6127 | Val Loss: 1.1601, Val Acc: 0.6175
Epoch 10/10 | Train Loss: 1.1595, Train Acc: 0.6160 | Val Loss: 1.1185, Val Acc: 0.6427
```

Run history:



Run summary:

epoch	9
training_accuracy	0.61598
training_loss	1.15947
val_accuracy	0.64267
val_loss	1.11849

View run **hl_3_bs_32_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/vhjwt3fv3>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182625-vhjwt3fv3\logs

```
wandb: Agent Starting Run: b9505vdr with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182707-b9505vdr

Syncing run **proud-sweep-84** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

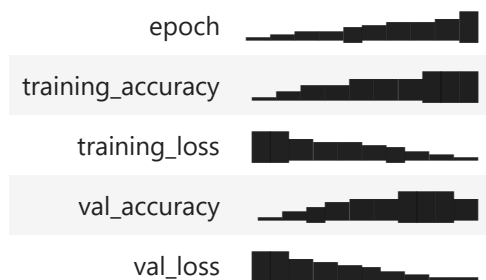
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/b9505vdr>

```
Epoch 1/10 | Train Loss: 2.3064, Train Acc: 0.1007 | Val Loss: 2.2274, Val Acc: 0.2655
Epoch 2/10 | Train Loss: 2.2278, Train Acc: 0.2639 | Val Loss: 2.1494, Val Acc: 0.3998
Epoch 3/10 | Train Loss: 2.1504, Train Acc: 0.4061 | Val Loss: 2.0518, Val Acc: 0.4553
Epoch 4/10 | Train Loss: 2.0533, Train Acc: 0.4574 | Val Loss: 1.9317, Val Acc: 0.5402
Epoch 5/10 | Train Loss: 1.9338, Train Acc: 0.5377 | Val Loss: 1.7889, Val Acc: 0.5782
Epoch 6/10 | Train Loss: 1.7917, Train Acc: 0.5762 | Val Loss: 1.6335, Val Acc: 0.6188
Epoch 7/10 | Train Loss: 1.6369, Train Acc: 0.6159 | Val Loss: 1.4718, Val Acc: 0.6528
Epoch 8/10 | Train Loss: 1.4771, Train Acc: 0.6422 | Val Loss: 1.3169, Val Acc: 0.6600
Epoch 9/10 | Train Loss: 1.3224, Train Acc: 0.6542 | Val Loss: 1.1782, Val Acc: 0.6598
Epoch 10/10 | Train Loss: 1.1854, Train Acc: 0.6558 | Val Loss: 1.1085, Val Acc: 0.6258
```


Run history:



Run summary:

epoch	9
training_accuracy	0.6558
training_loss	1.18539
val_accuracy	0.62583
val_loss	1.10854

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/b9505vdr>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182707-b9505vdr\logs

```
wandb: Agent Starting Run: aj9fclv8 with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 4
wandb: hidden_size: 128
wandb: learning_rate: 0.001
wandb: optimizer: adam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182729-aj9fclv8

Syncing run **twilight-sweep-85** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

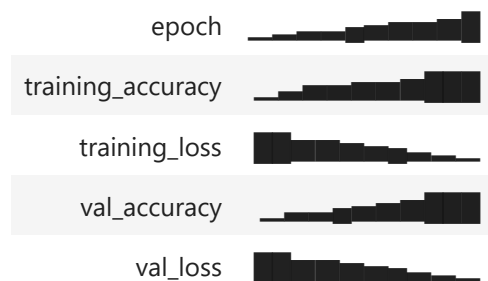
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/aj9fclv8>

```
Epoch 1/10 | Train Loss: 2.3204, Train Acc: 0.0698 | Val Loss: 2.2554, Val Acc: 0.2535
Epoch 2/10 | Train Loss: 2.2556, Train Acc: 0.2534 | Val Loss: 2.1949, Val Acc: 0.3538
Epoch 3/10 | Train Loss: 2.1956, Train Acc: 0.3484 | Val Loss: 2.1220, Val Acc: 0.3720
Epoch 4/10 | Train Loss: 2.1223, Train Acc: 0.3693 | Val Loss: 2.0272, Val Acc: 0.4305
Epoch 5/10 | Train Loss: 2.0275, Train Acc: 0.4275 | Val Loss: 1.9077, Val Acc: 0.4830
Epoch 6/10 | Train Loss: 1.9088, Train Acc: 0.4777 | Val Loss: 1.7613, Val Acc: 0.5517
Epoch 7/10 | Train Loss: 1.7645, Train Acc: 0.5451 | Val Loss: 1.6002, Val Acc: 0.5930
Epoch 8/10 | Train Loss: 1.6049, Train Acc: 0.5966 | Val Loss: 1.4341, Val Acc: 0.6260
Epoch 9/10 | Train Loss: 1.4417, Train Acc: 0.6245 | Val Loss: 1.2788, Val Acc: 0.6243
Epoch 10/10 | Train Loss: 1.2876, Train Acc: 0.6229 | Val Loss: 1.1509, Val Acc: 0.6360
```

Run history:



Run summary:

epoch	9
training_accuracy	0.62294
training_loss	1.28761
val_accuracy	0.636
val_loss	1.15094

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/aj9fclv8>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182729-aj9fclv8\logs`

```
wandb: Agent Starting Run: xrlp0tzu with config:
wandb:   activation: relu
wandb:   batch_size: 32
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182750-xrlp0tzu`

Syncing run **fluent-sweep-86** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

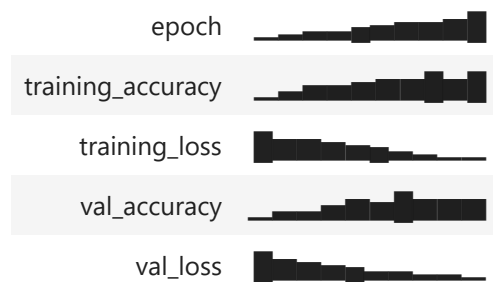
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/xrlp0tzu>

```
Epoch 1/10 | Train Loss: 2.3097, Train Acc: 0.0964 | Val Loss: 2.2334, Val Acc: 0.2520
Epoch 2/10 | Train Loss: 2.2347, Train Acc: 0.2440 | Val Loss: 2.1467, Val Acc: 0.3625
Epoch 3/10 | Train Loss: 2.1486, Train Acc: 0.3578 | Val Loss: 2.0332, Val Acc: 0.3645
Epoch 4/10 | Train Loss: 2.0369, Train Acc: 0.3577 | Val Loss: 1.9209, Val Acc: 0.4395
Epoch 5/10 | Train Loss: 1.9242, Train Acc: 0.4343 | Val Loss: 1.7903, Val Acc: 0.5243
Epoch 6/10 | Train Loss: 1.7956, Train Acc: 0.5119 | Val Loss: 1.6906, Val Acc: 0.4877
Epoch 7/10 | Train Loss: 1.6945, Train Acc: 0.4885 | Val Loss: 1.6263, Val Acc: 0.5853
Epoch 8/10 | Train Loss: 1.6297, Train Acc: 0.5816 | Val Loss: 1.5188, Val Acc: 0.5248
Epoch 9/10 | Train Loss: 1.5249, Train Acc: 0.5296 | Val Loss: 1.4844, Val Acc: 0.5598
Epoch 10/10 | Train Loss: 1.4860, Train Acc: 0.5603 | Val Loss: 1.3939, Val Acc: 0.5517
```

Run history:



Run summary:

epoch	9
training_accuracy	0.56031
training_loss	1.48597
val_accuracy	0.55167
val_loss	1.39389

View run **hl_4_bs_32_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/xrlp0tzu>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182750-xrlp0tzu\logs

```
wandb: Agent Starting Run: gagskcoa with config:
wandb:   activation: sigmoid
wandb:   batch_size: 16
wandb:   epochs: 5
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: sgd
wandb:   weight_decay: 0
wandb:   weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182812-gagskcoa

Syncing run **youthful-sweep-87** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

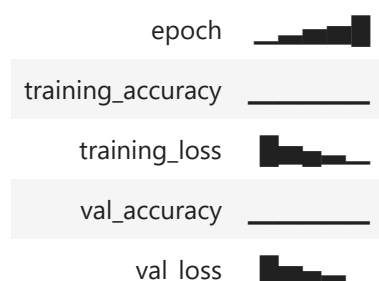
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/gagskcoa>

Epoch 1/5 | Train Loss: 2.3046, Train Acc: 0.1002 | Val Loss: 2.3052, Val Acc: 0.0983
Epoch 2/5 | Train Loss: 2.3046, Train Acc: 0.1002 | Val Loss: 2.3052, Val Acc: 0.0983
Epoch 3/5 | Train Loss: 2.3046, Train Acc: 0.1002 | Val Loss: 2.3052, Val Acc: 0.0983
Epoch 4/5 | Train Loss: 2.3045, Train Acc: 0.1002 | Val Loss: 2.3052, Val Acc: 0.0983
Epoch 5/5 | Train Loss: 2.3045, Train Acc: 0.1002 | Val Loss: 2.3052, Val Acc: 0.0983

Run history:



Run summary:

epoch	4
training_accuracy	0.10019
training_loss	2.30452
val_accuracy	0.09833
val_loss	2.30518

View run **hl_3_bs_16_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/gagskcoa>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182812-gagskcoa\logs

```
wandb: Agent Starting Run: wugc4kng with config:
wandb:   activation: tanh
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182828-wugc4kng

Syncing run **dainty-sweep-88** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

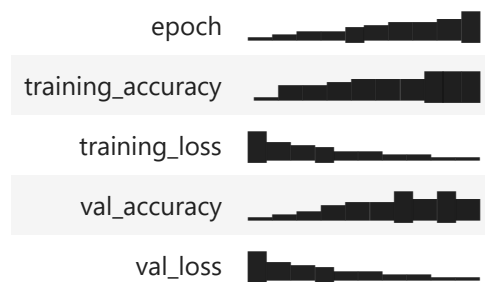
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/wugc4kng>

Epoch 1/10		Train Loss: 2.3192,	Train Acc: 0.1068		Val Loss: 1.9744,	Val Acc: 0.4162
Epoch 2/10		Train Loss: 1.9778,	Train Acc: 0.3991		Val Loss: 1.7296,	Val Acc: 0.4447
Epoch 3/10		Train Loss: 1.7385,	Train Acc: 0.4372		Val Loss: 1.6196,	Val Acc: 0.4772
Epoch 4/10		Train Loss: 1.6256,	Train Acc: 0.4707		Val Loss: 1.4622,	Val Acc: 0.5527
Epoch 5/10		Train Loss: 1.4706,	Train Acc: 0.5575		Val Loss: 1.3757,	Val Acc: 0.5913
Epoch 6/10		Train Loss: 1.3811,	Train Acc: 0.5865		Val Loss: 1.2605,	Val Acc: 0.6063
Epoch 7/10		Train Loss: 1.2669,	Train Acc: 0.6076		Val Loss: 1.2103,	Val Acc: 0.6467
Epoch 8/10		Train Loss: 1.2142,	Train Acc: 0.6438		Val Loss: 1.1204,	Val Acc: 0.6293
Epoch 9/10		Train Loss: 1.1254,	Train Acc: 0.6322		Val Loss: 1.1081,	Val Acc: 0.6588
Epoch 10/10		Train Loss: 1.1100,	Train Acc: 0.6611		Val Loss: 1.0518,	Val Acc: 0.6378

Run history:



Run summary:

epoch	9
training_accuracy	0.66113
training_loss	1.11004
val_accuracy	0.63783
val_loss	1.05184

View run **hl_4_bs_64_ac_tanh** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/wugc4kng>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182828-wugc4kng\logs

```
wandb: Agent Starting Run: jjlm5tfh with config:
wandb: activation: relu
wandb: batch_size: 64
wandb: epochs: 10
wandb: hidden_layers: 3
wandb: hidden_size: 64
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.0005
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182921-jjlm5tfh

Syncing run **balmy-sweep-89** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

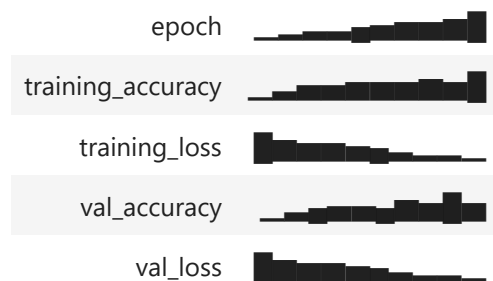
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/jjlm5tfh>

```
Epoch 1/10 | Train Loss: 2.3083, Train Acc: 0.1150 | Val Loss: 2.2211, Val Acc: 0.2535
Epoch 2/10 | Train Loss: 2.2217, Train Acc: 0.2496 | Val Loss: 2.1384, Val Acc: 0.3533
Epoch 3/10 | Train Loss: 2.1399, Train Acc: 0.3561 | Val Loss: 2.0547, Val Acc: 0.4130
Epoch 4/10 | Train Loss: 2.0570, Train Acc: 0.4135 | Val Loss: 1.9731, Val Acc: 0.4165
Epoch 5/10 | Train Loss: 1.9754, Train Acc: 0.4262 | Val Loss: 1.8853, Val Acc: 0.4532
Epoch 6/10 | Train Loss: 1.8897, Train Acc: 0.4644 | Val Loss: 1.8067, Val Acc: 0.4125
Epoch 7/10 | Train Loss: 1.8093, Train Acc: 0.4184 | Val Loss: 1.7166, Val Acc: 0.5258
Epoch 8/10 | Train Loss: 1.7220, Train Acc: 0.5283 | Val Loss: 1.6383, Val Acc: 0.4677
Epoch 9/10 | Train Loss: 1.6422, Train Acc: 0.4687 | Val Loss: 1.5662, Val Acc: 0.5793
Epoch 10/10 | Train Loss: 1.5731, Train Acc: 0.5819 | Val Loss: 1.5075, Val Acc: 0.5075
```

Run history:



Run summary:

epoch	9
training_accuracy	0.58193
training_loss	1.57311
val_accuracy	0.5075
val_loss	1.50747

View run **hl_3_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/jjlm5tfh>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182921-jjlm5tfh\logs`

```
wandb: Agent Starting Run: bebm1iwb with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 64
wandb:   learning_rate: 0.001
wandb:   optimizer: adam
wandb:   weight_decay: 0
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182937-bebm1iwb`

Syncing run **worthy-sweep-90** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

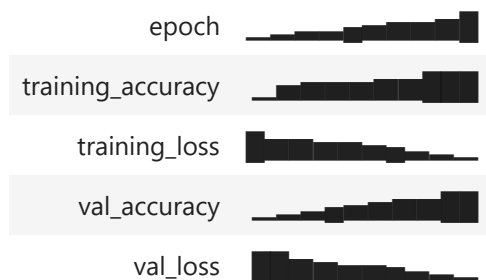
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bebm1iwb>

```
Epoch 1/10 | Train Loss: 2.2981, Train Acc: 0.0885 | Val Loss: 2.2481, Val Acc: 0.3290
Epoch 2/10 | Train Loss: 2.2506, Train Acc: 0.3201 | Val Loss: 2.2001, Val Acc: 0.3662
Epoch 3/10 | Train Loss: 2.2035, Train Acc: 0.3577 | Val Loss: 2.1422, Val Acc: 0.3827
Epoch 4/10 | Train Loss: 2.1460, Train Acc: 0.3751 | Val Loss: 2.0736, Val Acc: 0.4083
Epoch 5/10 | Train Loss: 2.0782, Train Acc: 0.3988 | Val Loss: 1.9960, Val Acc: 0.4427
Epoch 6/10 | Train Loss: 2.0014, Train Acc: 0.4339 | Val Loss: 1.9124, Val Acc: 0.4698
Epoch 7/10 | Train Loss: 1.9180, Train Acc: 0.4621 | Val Loss: 1.8233, Val Acc: 0.4825
Epoch 8/10 | Train Loss: 1.8294, Train Acc: 0.4759 | Val Loss: 1.7320, Val Acc: 0.4990
Epoch 9/10 | Train Loss: 1.7383, Train Acc: 0.4924 | Val Loss: 1.6388, Val Acc: 0.5128
Epoch 10/10 | Train Loss: 1.6453, Train Acc: 0.5051 | Val Loss: 1.5457, Val Acc: 0.5233
```

Run history:



Run summary:

epoch	9
training_accuracy	0.50511
training_loss	1.64532
val_accuracy	0.52333
val_loss	1.54574

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/bebm1iwb>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_182937-bebm1iwb\logs`

```
wandb: Agent Starting Run: 61zq8ryu with config:
wandb: activation: sigmoid
wandb: batch_size: 16
wandb: epochs: 5
wandb: hidden_layers: 3
wandb: hidden_size: 32
wandb: learning_rate: 0.001
wandb: optimizer: momentum
wandb: weight_decay: 0
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_182954-61zq8ryu`

Syncing run **swept-sweep-91** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

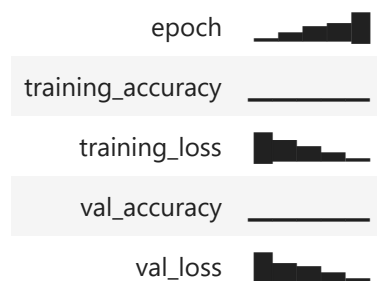
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/61zq8ryu>

```
Epoch 1/5 | Train Loss: 2.4140, Train Acc: 0.1003 | Val Loss: 2.4103, Val Acc: 0.0973
Epoch 2/5 | Train Loss: 2.4137, Train Acc: 0.1003 | Val Loss: 2.4100, Val Acc: 0.0973
Epoch 3/5 | Train Loss: 2.4134, Train Acc: 0.1003 | Val Loss: 2.4096, Val Acc: 0.0973
Epoch 4/5 | Train Loss: 2.4130, Train Acc: 0.1003 | Val Loss: 2.4091, Val Acc: 0.0973
Epoch 5/5 | Train Loss: 2.4125, Train Acc: 0.1003 | Val Loss: 2.4087, Val Acc: 0.0973
```

Run history:



Run summary:

epoch	4
training_accuracy	0.1003
training_loss	2.41251
val_accuracy	0.09733
val_loss	2.40867

View run **hl_3_bs_16_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/61zq8ryu>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_182954-61zq8ryu\logs

```
wandb: Agent Starting Run: b410yy0b with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 3
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.5
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_183005-b410yy0b

Syncing run **confused-sweep-92** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

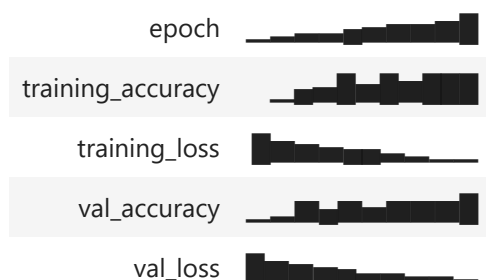
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/b410yy0b>

Epoch 1/10		Train Loss: 2.3313,	Train Acc: 0.0718		Val Loss: 2.1895,	Val Acc: 0.2937
Epoch 2/10		Train Loss: 2.1906,	Train Acc: 0.2947		Val Loss: 2.0627,	Val Acc: 0.3378
Epoch 3/10		Train Loss: 2.0640,	Train Acc: 0.3399		Val Loss: 1.9361,	Val Acc: 0.5573
Epoch 4/10		Train Loss: 1.9378,	Train Acc: 0.5544		Val Loss: 1.8198,	Val Acc: 0.4218
Epoch 5/10		Train Loss: 1.8213,	Train Acc: 0.4184		Val Loss: 1.7212,	Val Acc: 0.5533
Epoch 6/10		Train Loss: 1.7237,	Train Acc: 0.5541		Val Loss: 1.5869,	Val Acc: 0.4887
Epoch 7/10		Train Loss: 1.5886,	Train Acc: 0.4907		Val Loss: 1.5109,	Val Acc: 0.5632
Epoch 8/10		Train Loss: 1.5138,	Train Acc: 0.5633		Val Loss: 1.3970,	Val Acc: 0.5775
Epoch 9/10		Train Loss: 1.3985,	Train Acc: 0.5801		Val Loss: 1.3268,	Val Acc: 0.5682
Epoch 10/10		Train Loss: 1.3327,	Train Acc: 0.5673		Val Loss: 1.2546,	Val Acc: 0.6095

Run history:



Run summary:

epoch	9
training_accuracy	0.56731
training_loss	1.33271
val_accuracy	0.6095
val_loss	1.25459

View run **hl_3_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/b410yy0b>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_183005-b410yy0b\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: 6d6lgfgg with config:  
wandb:  activation: sigmoid  
wandb:  batch_size: 16  
wandb:  epochs: 5  
wandb:  hidden_layers: 3  
wandb:  hidden_size: 32  
wandb:  learning_rate: 0.001  
wandb:  optimizer: rmsprop  
wandb:  weight_decay: 0.0005  
wandb:  weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_183031-6d6lgfgg

Syncing run **scarlet-sweep-93** to Weights & Biases (docs)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

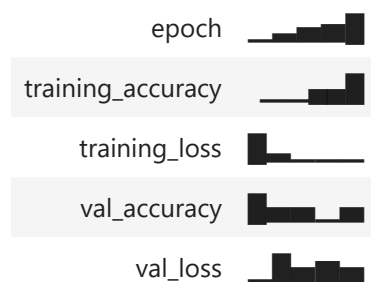
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/6d6lgfgg>

```
Epoch 1/5 | Train Loss: 2.3030, Train Acc: 0.0999 | Val Loss: 2.3026, Val Acc: 0.1013
Epoch 2/5 | Train Loss: 2.3027, Train Acc: 0.0999 | Val Loss: 2.3028, Val Acc: 0.0983
Epoch 3/5 | Train Loss: 2.3026, Train Acc: 0.1002 | Val Loss: 2.3027, Val Acc: 0.0983
Epoch 4/5 | Train Loss: 2.3026, Train Acc: 0.1002 | Val Loss: 2.3028, Val Acc: 0.0933
Epoch 5/5 | Train Loss: 2.3026, Train Acc: 0.1007 | Val Loss: 2.3027, Val Acc: 0.0983
```

Run history:



Run summary:

epoch	4
training_accuracy	0.10074
training_loss	2.30258
val_accuracy	0.09833
val_loss	2.3027

View run **hl_3_bs_16_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/6d6lgfgg>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_183031-6d6lgfgg\logs`

```
wandb: Agent Starting Run: if5qdagx with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 4
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_183043-if5qdagx

Syncing run **prime-sweep-94** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

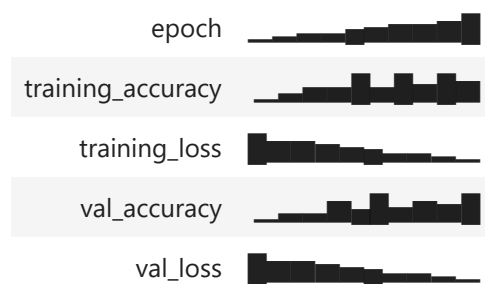
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/if5qdagx>

Epoch 1/10		Train Loss: 2.2954,	Train Acc: 0.1221		Val Loss: 2.2306,	Val Acc: 0.2743
Epoch 2/10		Train Loss: 2.2318,	Train Acc: 0.2697		Val Loss: 2.1558,	Val Acc: 0.3910
Epoch 3/10		Train Loss: 2.1576,	Train Acc: 0.3821		Val Loss: 2.0654,	Val Acc: 0.4002
Epoch 4/10		Train Loss: 2.0688,	Train Acc: 0.3896		Val Loss: 1.9643,	Val Acc: 0.6175
Epoch 5/10		Train Loss: 1.9669,	Train Acc: 0.6031		Val Loss: 1.8702,	Val Acc: 0.4392
Epoch 6/10		Train Loss: 1.8774,	Train Acc: 0.4256		Val Loss: 1.7698,	Val Acc: 0.6223
Epoch 7/10		Train Loss: 1.7724,	Train Acc: 0.6120		Val Loss: 1.6642,	Val Acc: 0.5100
Epoch 8/10		Train Loss: 1.6719,	Train Acc: 0.5051		Val Loss: 1.5800,	Val Acc: 0.6177
Epoch 9/10		Train Loss: 1.5839,	Train Acc: 0.6139		Val Loss: 1.4823,	Val Acc: 0.5185
Epoch 10/10		Train Loss: 1.4934,	Train Acc: 0.5131		Val Loss: 1.3915,	Val Acc: 0.6467

Run history:



Run summary:

epoch	9
training_accuracy	0.51309
training_loss	1.49335
val_accuracy	0.64667
val_loss	1.39146

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/if5qdagx>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_183043-if5qdagx\logs

```
wandb: Agent Starting Run: 5p922ew6 with config:
wandb: activation: relu
wandb: batch_size: 16
wandb: epochs: 5
wandb: hidden_layers: 5
wandb: hidden_size: 32
wandb: learning_rate: 0.001
wandb: optimizer: nadam
wandb: weight_decay: 0.5
wandb: weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_183104-5p922ew6

Syncing run **distinctive-sweep-95** to [Weights & Biases \(docs\)](https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

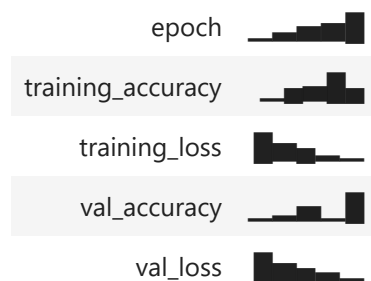
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/5p922ew6>

```
Epoch 1/5 | Train Loss: 2.3113, Train Acc: 0.0782 | Val Loss: 2.2839, Val Acc: 0.1245
Epoch 2/5 | Train Loss: 2.2844, Train Acc: 0.1241 | Val Loss: 2.2592, Val Acc: 0.1475
Epoch 3/5 | Train Loss: 2.2596, Train Acc: 0.1477 | Val Loss: 2.2332, Val Acc: 0.1948
Epoch 4/5 | Train Loss: 2.2350, Train Acc: 0.1909 | Val Loss: 2.2166, Val Acc: 0.1245
Epoch 5/5 | Train Loss: 2.2189, Train Acc: 0.1238 | Val Loss: 2.1889, Val Acc: 0.2505
```

Run history:



Run summary:

epoch	4
training_accuracy	0.1238
training_loss	2.21893
val_accuracy	0.2505
val_loss	2.18893

View run **hl_5_bs_16_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/5p922ew6>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_183104-5p922ew6\logs

```
wandb: Agent Starting Run: icbonrvk with config:
wandb:   activation: relu
wandb:   batch_size: 64
wandb:   epochs: 10
wandb:   hidden_layers: 5
wandb:   hidden_size: 128
wandb:   learning_rate: 0.001
wandb:   optimizer: nadam
wandb:   weight_decay: 0.0005
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_183115-icbonrvk

Syncing run **confused-sweep-96** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/icbonrvk>

Epoch 1/10 | Train Loss: 2.3099, Train Acc: 0.1011 | Val Loss: 2.2625, Val Acc: 0.2435

Epoch 2/10 | Train Loss: 2.2641, Train Acc: 0.2450 | Val Loss: 2.1937, Val Acc: 0.3970

Epoch 3/10 | Train Loss: 2.1970, Train Acc: 0.3881 | Val Loss: 2.1050, Val Acc: 0.4652

Epoch 4/10 | Train Loss: 2.1103, Train Acc: 0.4523 | Val Loss: 1.9910, Val Acc: 0.4295

Epoch 5/10 | Train Loss: 1.9993, Train Acc: 0.4199 | Val Loss: 1.8628, Val Acc: 0.4767

Epoch 6/10 | Train Loss: 1.8733, Train Acc: 0.4619 | Val Loss: 1.7357, Val Acc: 0.4373

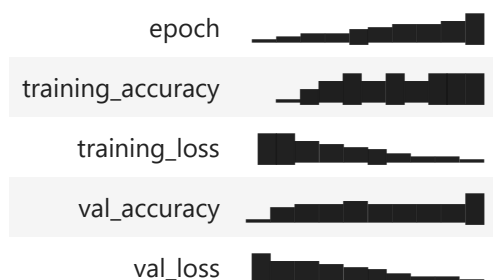
Epoch 7/10 | Train Loss: 1.7493, Train Acc: 0.4247 | Val Loss: 1.6449, Val Acc: 0.4590

Epoch 8/10 | Train Loss: 1.6577, Train Acc: 0.4448 | Val Loss: 1.5557, Val Acc: 0.4602

Epoch 9/10 | Train Loss: 1.5715, Train Acc: 0.4539 | Val Loss: 1.4953, Val Acc: 0.4622

Epoch 10/10 | Train Loss: 1.5094, Train Acc: 0.4476 | Val Loss: 1.4308, Val Acc: 0.5307

Run history:



Run summary:

epoch	9
training_accuracy	0.44756
training_loss	1.50943
val_accuracy	0.53067
val_loss	1.43077

View run **hl_5_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/icbonrvk>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: `.\wandb\run-20250316_183115-icbonrvk\logs`

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: 6ccdrjjf with config:  
wandb:  activation: relu  
wandb:  batch_size: 32  
wandb:  epochs: 10  
wandb:  hidden_layers: 3  
wandb:  hidden_size: 128  
wandb:  learning_rate: 0.001  
wandb:  optimizer: nadam  
wandb:  weight_decay: 0.5  
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in `c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_183147-6ccdrjjf`

Syncing run **smooth-sweep-97** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

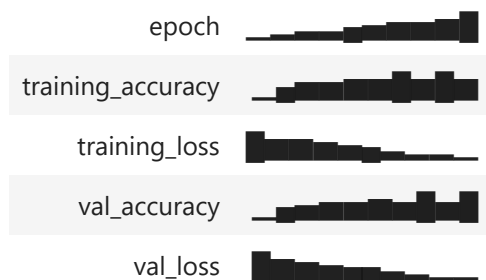
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/6ccdrjff>

Epoch 1/10		Train Loss: 2.3107,	Train Acc: 0.0575		Val Loss: 2.2179,	Val Acc: 0.3137
Epoch 2/10		Train Loss: 2.2194,	Train Acc: 0.3118		Val Loss: 2.1237,	Val Acc: 0.4490
Epoch 3/10		Train Loss: 2.1265,	Train Acc: 0.4450		Val Loss: 2.0123,	Val Acc: 0.4837
Epoch 4/10		Train Loss: 2.0150,	Train Acc: 0.4765		Val Loss: 1.8890,	Val Acc: 0.5363
Epoch 5/10		Train Loss: 1.8933,	Train Acc: 0.5314		Val Loss: 1.7711,	Val Acc: 0.5370
Epoch 6/10		Train Loss: 1.7726,	Train Acc: 0.5337		Val Loss: 1.6722,	Val Acc: 0.5942
Epoch 7/10		Train Loss: 1.6812,	Train Acc: 0.5832		Val Loss: 1.5743,	Val Acc: 0.5260
Epoch 8/10		Train Loss: 1.5750,	Train Acc: 0.5231		Val Loss: 1.4967,	Val Acc: 0.6158
Epoch 9/10		Train Loss: 1.5085,	Train Acc: 0.6047		Val Loss: 1.3835,	Val Acc: 0.5538
Epoch 10/10		Train Loss: 1.3861,	Train Acc: 0.5499		Val Loss: 1.3271,	Val Acc: 0.6253

Run history:



Run summary:

epoch	9
training_accuracy	0.54993
training_loss	1.38612
val_accuracy	0.62533
val_loss	1.32706

View run **hl_3_bs_32_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/6ccdrjff>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_183147-6ccdrjff\logs

```
wandb: Agent Starting Run: ys7lnlty with config:
wandb: activation: sigmoid
wandb: batch_size: 16
wandb: epochs: 5
wandb: hidden_layers: 4
wandb: hidden_size: 32
wandb: learning_rate: 0.001
wandb: optimizer: adam
wandb: weight_decay: 0
wandb: weight_init: random
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_183204-ys7lnlty

Syncing run **visionary-sweep-98** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

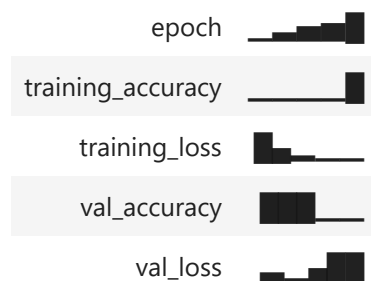
View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ys7lnlty>

```
Epoch 1/5 | Train Loss: 2.3032, Train Acc: 0.0999 | Val Loss: 2.3027, Val Acc: 0.1013
Epoch 2/5 | Train Loss: 2.3028, Train Acc: 0.0999 | Val Loss: 2.3026, Val Acc: 0.1013
Epoch 3/5 | Train Loss: 2.3027, Train Acc: 0.0999 | Val Loss: 2.3027, Val Acc: 0.1013
Epoch 4/5 | Train Loss: 2.3026, Train Acc: 0.0999 | Val Loss: 2.3028, Val Acc: 0.0933
Epoch 5/5 | Train Loss: 2.3026, Train Acc: 0.1007 | Val Loss: 2.3028, Val Acc: 0.0933
```

Run history:



Run summary:

epoch	4
training_accuracy	0.10074
training_loss	2.3026
val_accuracy	0.09333
val_loss	2.30282

View run **hl_4_bs_16_ac_sigmoid** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/ys7lnlty>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_183204-ys7lnlty\logs

```
wandb: Sweep Agent: Waiting for job.  
wandb: Job received.  
wandb: Agent Starting Run: du4xdzej with config:  
wandb:   activation: relu  
wandb:   batch_size: 64  
wandb:   epochs: 10  
wandb:   hidden_layers: 3  
wandb:   hidden_size: 128  
wandb:   learning_rate: 0.001  
wandb:   optimizer: nadam  
wandb:   weight_decay: 0.5  
wandb:   weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_183224-du4xdzej

Syncing run **toasty-sweep-99** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/du4xdzej>

Epoch 1/10 | Train Loss: 2.3182, Train Acc: 0.0880 | Val Loss: 2.2092, Val Acc: 0.1755

Epoch 2/10 | Train Loss: 2.2103, Train Acc: 0.1825 | Val Loss: 2.0999, Val Acc: 0.3848

Epoch 3/10 | Train Loss: 2.1005, Train Acc: 0.3646 | Val Loss: 1.9767, Val Acc: 0.4927

Epoch 4/10 | Train Loss: 1.9795, Train Acc: 0.4789 | Val Loss: 1.8437, Val Acc: 0.6113

Epoch 5/10 | Train Loss: 1.8462, Train Acc: 0.5984 | Val Loss: 1.7034, Val Acc: 0.5833

Epoch 6/10 | Train Loss: 1.7101, Train Acc: 0.5739 | Val Loss: 1.5987, Val Acc: 0.6137

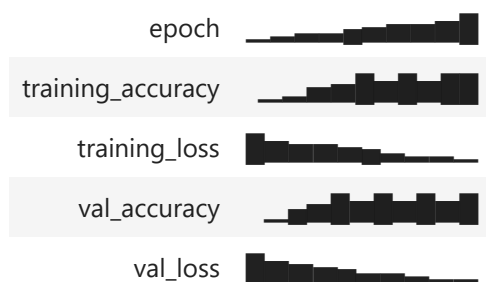
Epoch 7/10 | Train Loss: 1.6015, Train Acc: 0.6102 | Val Loss: 1.4824, Val Acc: 0.5800

Epoch 8/10 | Train Loss: 1.4944, Train Acc: 0.5704 | Val Loss: 1.4121, Val Acc: 0.6267

Epoch 9/10 | Train Loss: 1.4157, Train Acc: 0.6310 | Val Loss: 1.3101, Val Acc: 0.6007

Epoch 10/10 | Train Loss: 1.3244, Train Acc: 0.5969 | Val Loss: 1.2640, Val Acc: 0.6423

Run history:



Run summary:

epoch	9
training_accuracy	0.59694
training_loss	1.32443
val_accuracy	0.64233
val_loss	1.26403

View run **hl_3_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/du4xdzej>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_183224-du4xdzej\logs

```
wandb: Sweep Agent: Waiting for job.
wandb: Job received.
wandb: Agent Starting Run: it654633 with config:
wandb:  activation: relu
wandb:  batch_size: 64
wandb:  epochs: 10
wandb:  hidden_layers: 4
wandb:  hidden_size: 128
wandb:  learning_rate: 0.001
wandb:  optimizer: nadam
wandb:  weight_decay: 0.0005
wandb:  weight_init: xavier
```

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250316_183305-it654633

Syncing run **misunderstood-sweep-100** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/it654633>

Epoch 1/10 | Train Loss: 2.3151, Train Acc: 0.1378 | Val Loss: 2.2340, Val Acc: 0.2300

Epoch 2/10 | Train Loss: 2.2332, Train Acc: 0.2279 | Val Loss: 2.1480, Val Acc: 0.3075

Epoch 3/10 | Train Loss: 2.1475, Train Acc: 0.3056 | Val Loss: 2.0527, Val Acc: 0.4050

Epoch 4/10 | Train Loss: 2.0515, Train Acc: 0.4018 | Val Loss: 1.9246, Val Acc: 0.4060

Epoch 5/10 | Train Loss: 1.9256, Train Acc: 0.4070 | Val Loss: 1.8018, Val Acc: 0.4558

Epoch 6/10 | Train Loss: 1.8004, Train Acc: 0.4568 | Val Loss: 1.6702, Val Acc: 0.4775

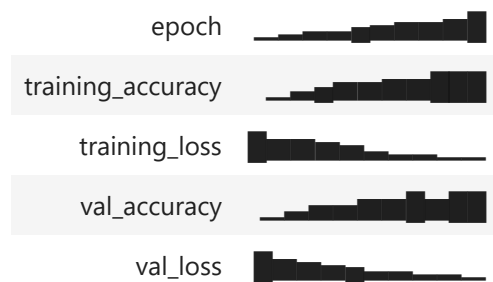
Epoch 7/10 | Train Loss: 1.6738, Train Acc: 0.4805 | Val Loss: 1.6260, Val Acc: 0.5080

Epoch 8/10 | Train Loss: 1.6275, Train Acc: 0.5051 | Val Loss: 1.5669, Val Acc: 0.4893

Epoch 9/10 | Train Loss: 1.5702, Train Acc: 0.4884 | Val Loss: 1.5075, Val Acc: 0.5142

Epoch 10/10 | Train Loss: 1.5163, Train Acc: 0.5136 | Val Loss: 1.4417, Val Acc: 0.5047

Run history:



Run summary:

epoch	9
training_accuracy	0.51359
training_loss	1.51628
val_accuracy	0.50467
val_loss	1.44171

View run **hl_4_bs_64_ac_relu** at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/it654633>

View project at: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

Synced 5 W&B file(s), 0 media file(s), 0 artifact file(s) and 0 other file(s)

Find logs at: .\wandb\run-20250316_183305-it654633\logs

confusion matrix on best model with cross-entropy loss

```
In [ ]: import numpy as np
import matplotlib.pyplot as plt
from tensorflow.keras.datasets import fashion_mnist
from sklearn.metrics import confusion_matrix, ConfusionMatrixDisplay, accuracy_score

# Load dataset
(x_train, y_train), (x_test, y_test) = fashion_mnist.load_data()
x_train, x_test = x_train / 255.0, x_test / 255.0 # Normalize
x_train, x_test = x_train.reshape(x_train.shape[0], -1), x_test.reshape(x_test.shape[0], -1)

# One-hot encode Labels
```

```

num_classes = 10
y_train_onehot = np.eye(num_classes)[y_train]
y_test_onehot = np.eye(num_classes)[y_test]

# Split into training (90%) and validation (10%)
val_size = int(0.1 * x_train.shape[0])
x_val, y_val_onehot = x_train[:val_size], y_train_onehot[:val_size]
x_train, y_train_onehot = x_train[val_size:], y_train_onehot[val_size:]

# Xavier initialization
def xavier_init(size_in, size_out):
    return np.random.randn(size_in, size_out) * np.sqrt(2 / (size_in + size_out))

# Activation function (Tanh) and its derivative
def tanh(x):
    return np.tanh(x)

def tanh_derivative(x):
    return 1 - np.tanh(x) ** 2

# Loss functions and their derivatives
def softmax(x):
    exp_x = np.exp(x - np.max(x, axis=1, keepdims=True))
    return exp_x / np.sum(exp_x, axis=1, keepdims=True)

def cross_entropy(y_true, y_pred):
    return -np.mean(np.sum(y_true * np.log(y_pred + 1e-9), axis=1))

def cross_entropy_derivative(y_true, y_pred):
    return y_pred - y_true

def mse(y_true, y_pred):
    return np.mean((y_true - y_pred) ** 2)

def mse_derivative(y_true, y_pred):
    return (y_pred - y_true) / y_true.shape[0]

# Neural Network with Adam Optimization
class NeuralNetAdam:
    def __init__(self, input_size, hidden_size, output_size, num_layers, learning_rate, beta1, beta2, epsilon, loss_function):
        self.learning_rate = learning_rate
        self.beta1 = beta1
        self.beta2 = beta2
        self.epsilon = epsilon
        self.loss_function = loss_function

        # Xavier initialization
        self.weights = [xavier_init(input_size, hidden_size)]
        self.biases = [np.zeros((1, hidden_size))]
        for _ in range(num_layers - 1):
            self.weights.append(xavier_init(hidden_size, hidden_size))
            self.biases.append(np.zeros((1, hidden_size)))
        self.weights.append(xavier_init(hidden_size, output_size))
        self.biases.append(np.zeros((1, output_size)))

        # Adam optimization parameters
        self.m_w = [np.zeros_like(w) for w in self.weights]
        self.v_w = [np.zeros_like(w) for w in self.weights]
        self.m_b = [np.zeros_like(b) for b in self.biases]
        self.v_b = [np.zeros_like(b) for b in self.biases]

```

```

self.t = 1

def compute_metrics(self, X, y_true):
    y_pred = self.forward(X)
    loss = cross_entropy(y_true, y_pred) if self.loss_function == "cross_ent
    accuracy = accuracy_score(np.argmax(y_true, axis=1), np.argmax(y_pred, a
    return loss, accuracy

def forward(self, X):
    self.a = [X]
    self.z = []
    for i in range(len(self.weights) - 1):
        z = np.dot(self.a[-1], self.weights[i]) + self.biases[i]
        self.z.append(z)
        self.a.append(tanh(z))
    z = np.dot(self.a[-1], self.weights[-1]) + self.biases[-1]
    self.z.append(z)

    if self.loss_function == "cross_entropy":
        self.a.append(softmax(z))
    elif self.loss_function == "mse":
        self.a.append(tanh(z))
    return self.a[-1]

def backward(self, X, y_true):
    m = y_true.shape[0]
    dW = []
    db = []

    if self.loss_function == "cross_entropy":
        dz = cross_entropy_derivative(y_true, self.a[-1])
    elif self.loss_function == "mse":
        dz = mse_derivative(y_true, self.a[-1]) * tanh_derivative(self.z[-1])

    for i in reversed(range(len(self.weights))):
        dw = (1/m) * np.dot(self.a[i].T, dz)
        dbias = (1/m) * np.sum(dz, axis=0, keepdims=True)
        dW.insert(0, dw)
        db.insert(0, dbias)
        if i > 0:
            dz = np.dot(dz, self.weights[i].T) * tanh_derivative(self.z[i -

# Adam update
for i in range(len(self.weights)):
    self.m_w[i] = self.beta1 * self.m_w[i] + (1 - self.beta1) * dW[i]
    self.v_w[i] = self.beta2 * self.v_w[i] + (1 - self.beta2) * (dW[i] *
    self.m_b[i] = self.beta1 * self.m_b[i] + (1 - self.beta1) * db[i]
    self.v_b[i] = self.beta2 * self.v_b[i] + (1 - self.beta2) * (db[i] *

# Bias correction
m_w_hat = self.m_w[i] / (1 - self.beta1 ** self.t)
v_w_hat = self.v_w[i] / (1 - self.beta2 ** self.t)
m_b_hat = self.m_b[i] / (1 - self.beta1 ** self.t)
v_b_hat = self.v_b[i] / (1 - self.beta2 ** self.t)

self.weights[i] -= self.learning_rate * m_w_hat / (np.sqrt(v_w_hat)
self.biases[i] -= self.learning_rate * m_b_hat / (np.sqrt(v_b_hat) +

self.t += 1

```

```

def train(self, X_train, y_train, X_val, y_val, epochs, batch_size):
    train_losses, val_losses, train_accs, val_accs = [], [], [], []

    for epoch in range(epochs):
        indices = np.random.permutation(X_train.shape[0])
        X_train, y_train = X_train[indices], y_train[indices]

        for i in range(0, X_train.shape[0], batch_size):
            X_batch = X_train[i:i + batch_size]
            y_batch = y_train[i:i + batch_size]
            self.forward(X_batch)
            self.backward(X_batch, y_batch)

        train_loss, train_acc = self.compute_metrics(X_train, y_train)
        val_loss, val_acc = self.compute_metrics(X_val, y_val)

        train_losses.append(train_loss)
        val_losses.append(val_loss)
        train_accs.append(train_acc)
        val_accs.append(val_acc)

        print(f"Epoch {epoch+1}/{epochs} | Train Loss: {train_loss:.4f} | Tr

    return train_losses, val_losses, train_accs, val_accs

```

```

In [33]: # Initialize model
loss_choice = "cross_entropy"
model = NeuralNetAdam(input_size=x_train.shape[1], hidden_size=128, output_size=

# Train
train_losses, val_losses, train_accs, val_accs = model.train(x_train, y_train_on

# Compute test loss and accuracy
y_test_pred = model.forward(x_test)
test_loss = cross_entropy(y_test_onehot, y_test_pred) if loss_choice == "cross_e
y_test_pred_labels = np.argmax(y_test_pred, axis=1)
test_acc = accuracy_score(y_test, y_test_pred_labels)

# Print test metrics
print(f"\nTest Loss: {test_loss:.4f} | Test Accuracy: {test_acc:.4f}")

# Compute and plot confusion matrix
cm = confusion_matrix(y_test, y_test_pred_labels)
disp = ConfusionMatrixDisplay(confusion_matrix=cm)
disp.plot(cmap="Blues")
plt.title("Confusion Matrix on Test Set")
plt.show()

# Plot confusion matrix
disp.plot(cmap="Blues", values_format="d")
plt.title("Confusion Matrix on Best Model")

wandb.init(project="DeepLearning1", name="confusion matrix best model")

# Save figure before logging
plt.savefig("confusion_matrix_best.png")
wandb.log({
    "test_loss": test_loss,
    "test_accuracy": test_acc,
    "confusion_matrix_best": wandb.Image("confusion_matrix_best.png") # Log sav

```

```

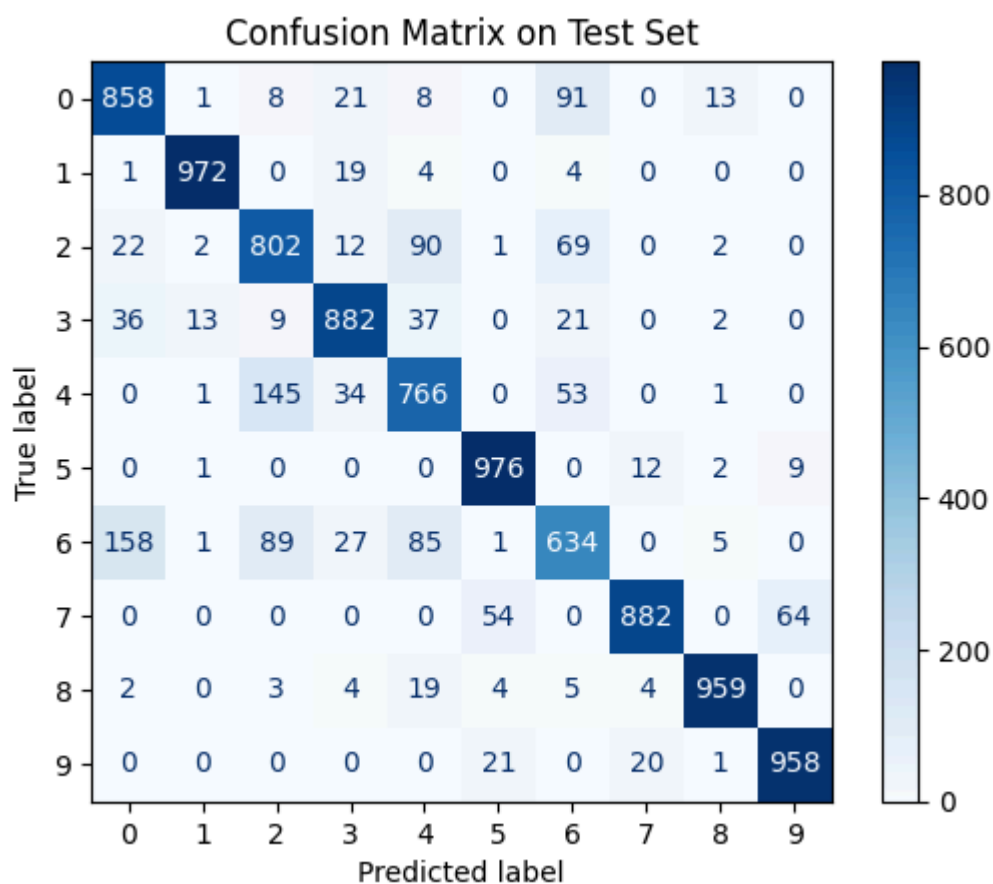
}))

# Finish wandb run
wandb.finish()

```

Epoch 1/10 | Train Loss: 0.3861 | Train Acc: 0.8610 | Val Loss: 0.3928 | Val Acc: 0.8593
 Epoch 2/10 | Train Loss: 0.3442 | Train Acc: 0.8762 | Val Loss: 0.3626 | Val Acc: 0.8673
 Epoch 3/10 | Train Loss: 0.3462 | Train Acc: 0.8715 | Val Loss: 0.3789 | Val Acc: 0.8612
 Epoch 4/10 | Train Loss: 0.3219 | Train Acc: 0.8791 | Val Loss: 0.3600 | Val Acc: 0.8702
 Epoch 5/10 | Train Loss: 0.3094 | Train Acc: 0.8856 | Val Loss: 0.3481 | Val Acc: 0.8750
 Epoch 6/10 | Train Loss: 0.2968 | Train Acc: 0.8921 | Val Loss: 0.3327 | Val Acc: 0.8818
 Epoch 7/10 | Train Loss: 0.2934 | Train Acc: 0.8898 | Val Loss: 0.3401 | Val Acc: 0.8757
 Epoch 8/10 | Train Loss: 0.3039 | Train Acc: 0.8833 | Val Loss: 0.3561 | Val Acc: 0.8725
 Epoch 9/10 | Train Loss: 0.2944 | Train Acc: 0.8908 | Val Loss: 0.3403 | Val Acc: 0.8763
 Epoch 10/10 | Train Loss: 0.2779 | Train Acc: 0.8967 | Val Loss: 0.3448 | Val Acc: 0.8787

Test Loss: 0.3707 | Test Accuracy: 0.8689



Comparing best model with cross entropy loss against MSE loss with same parameters

```

In [34]: # Initialize model
loss_choice = "mse"
model = NeuralNetAdam(input_size=x_train.shape[1], hidden_size=128, output_size=

# Train
train_losses_mse, val_losses_mse, train_accs_mse, val_accs_mse = model.train(x_t

# Compute test loss and accuracy
y_test_pred = model.forward(x_test)
test_loss = cross_entropy(y_test_onehot, y_test_pred) if loss_choice == "cross_e
y_test_pred_labels = np.argmax(y_test_pred, axis=1)
test_acc = accuracy_score(y_test, y_test_pred_labels)

# Print test metrics
print(f"\nTest Loss: {test_loss:.4f} | Test Accuracy: {test_acc:.4f}")

# Predict test labels
y_pred_probs = model.forward(x_test) # Get predicted probabilities
y_pred = np.argmax(y_pred_probs, axis=1) # Convert to class labels

# Compute confusion matrix
cm = confusion_matrix(y_test, y_pred)
disp = ConfusionMatrixDisplay(confusion_matrix=cm, display_labels=np.arange(num_
# Plot confusion matrix
fig, ax = plt.subplots(figsize=(8, 6)) # Create a figure explicitly
disp.plot(cmap="Blues", values_format="d", ax=ax)
plt.title("Confusion Matrix with MSE")

wandb.init(project="DeepLearning1", name="confusion matrix for MSE")

# Save figure before logging
plt.savefig("confusion_matrix_MSE.png")
wandb.log({
    "test_loss": test_loss,
    "test_accuracy": test_acc,
    "confusion_matrix_MSE": wandb.Image("confusion_matrix_MSE.png") # Log saved
})

# Show the plot
plt.show()

```

```
Epoch 1/10 | Train Loss: 0.0218 | Train Acc: 0.8576 | Val Loss: 0.0219 | Val Acc: 0.8558

Epoch 2/10 | Train Loss: 0.0214 | Train Acc: 0.8592 | Val Loss: 0.0224 | Val Acc: 0.8548
Epoch 3/10 | Train Loss: 0.0182 | Train Acc: 0.8824 | Val Loss: 0.0193 | Val Acc: 0.8747
Epoch 4/10 | Train Loss: 0.0184 | Train Acc: 0.8734 | Val Loss: 0.0193 | Val Acc: 0.8658
Epoch 5/10 | Train Loss: 0.0171 | Train Acc: 0.8918 | Val Loss: 0.0188 | Val Acc: 0.8778
Epoch 6/10 | Train Loss: 0.0165 | Train Acc: 0.8926 | Val Loss: 0.0188 | Val Acc: 0.8782
Epoch 7/10 | Train Loss: 0.0163 | Train Acc: 0.8925 | Val Loss: 0.0183 | Val Acc: 0.8770
Epoch 8/10 | Train Loss: 0.0166 | Train Acc: 0.8940 | Val Loss: 0.0189 | Val Acc: 0.8772
Epoch 9/10 | Train Loss: 0.0162 | Train Acc: 0.8968 | Val Loss: 0.0187 | Val Acc: 0.8797
Epoch 10/10 | Train Loss: 0.0160 | Train Acc: 0.8984 | Val Loss: 0.0185 | Val Acc: 0.8798
```

```
Test Loss: 0.0199 | Test Accuracy: 0.8710
```

comparing train loss, train accuracy, val loss and val accuracy for MSE and Cross Entropy Loss

```
In [7]: # Create subplots for loss and accuracy comparisons
fig, axes = plt.subplots(2, 2, figsize=(12, 10))

# Training Loss Comparison
axes[0, 0].plot(train_losses, label="Cross-Entropy", color="blue")
axes[0, 0].plot(train_losses_mse, label="MSE", color="red", linestyle="dashed")
axes[0, 0].set_title("Training Loss Comparison")
axes[0, 0].set_xlabel("Epochs")
axes[0, 0].set_ylabel("Loss")
axes[0, 0].legend()
axes[0, 0].grid()

# Validation Loss Comparison
axes[0, 1].plot(val_losses, label="Cross-Entropy", color="blue")
axes[0, 1].plot(val_losses_mse, label="MSE", color="red", linestyle="dashed")
axes[0, 1].set_title("Validation Loss Comparison")
axes[0, 1].set_xlabel("Epochs")
axes[0, 1].set_ylabel("Loss")
axes[0, 1].legend()
axes[0, 1].grid()

# Training Accuracy Comparison
axes[1, 0].plot(train_accs, label="Cross-Entropy", color="blue")
axes[1, 0].plot(train_accs_mse, label="MSE", color="red", linestyle="dashed")
axes[1, 0].set_title("Training Accuracy Comparison")
axes[1, 0].set_xlabel("Epochs")
axes[1, 0].set_ylabel("Accuracy")
axes[1, 0].legend()
axes[1, 0].grid()
```



```
# Validation Accuracy Comparison
axes[1, 1].plot(val_accs, label="Cross-Entropy", color="blue")
axes[1, 1].plot(val_accs_mse, label="MSE", color="red", linestyle="dashed")
axes[1, 1].set_title("Validation Accuracy Comparison")
axes[1, 1].set_xlabel("Epochs")
axes[1, 1].set_ylabel("Accuracy")
axes[1, 1].legend()
axes[1, 1].grid()

# # Adjust layout and display
# plt.tight_layout()
# plt.show()
wandb.init(project="DeepLearning1", name="MSE_vs_CE_Comparison")

# Save plot as image
plt.tight_layout()
plot_path = "loss_accuracy_comparison.png"
plt.savefig(plot_path)

# Log image to wandb
wandb.log({"Loss & Accuracy Comparison": wandb.Image(plot_path)})

# Show plot
plt.show()
```

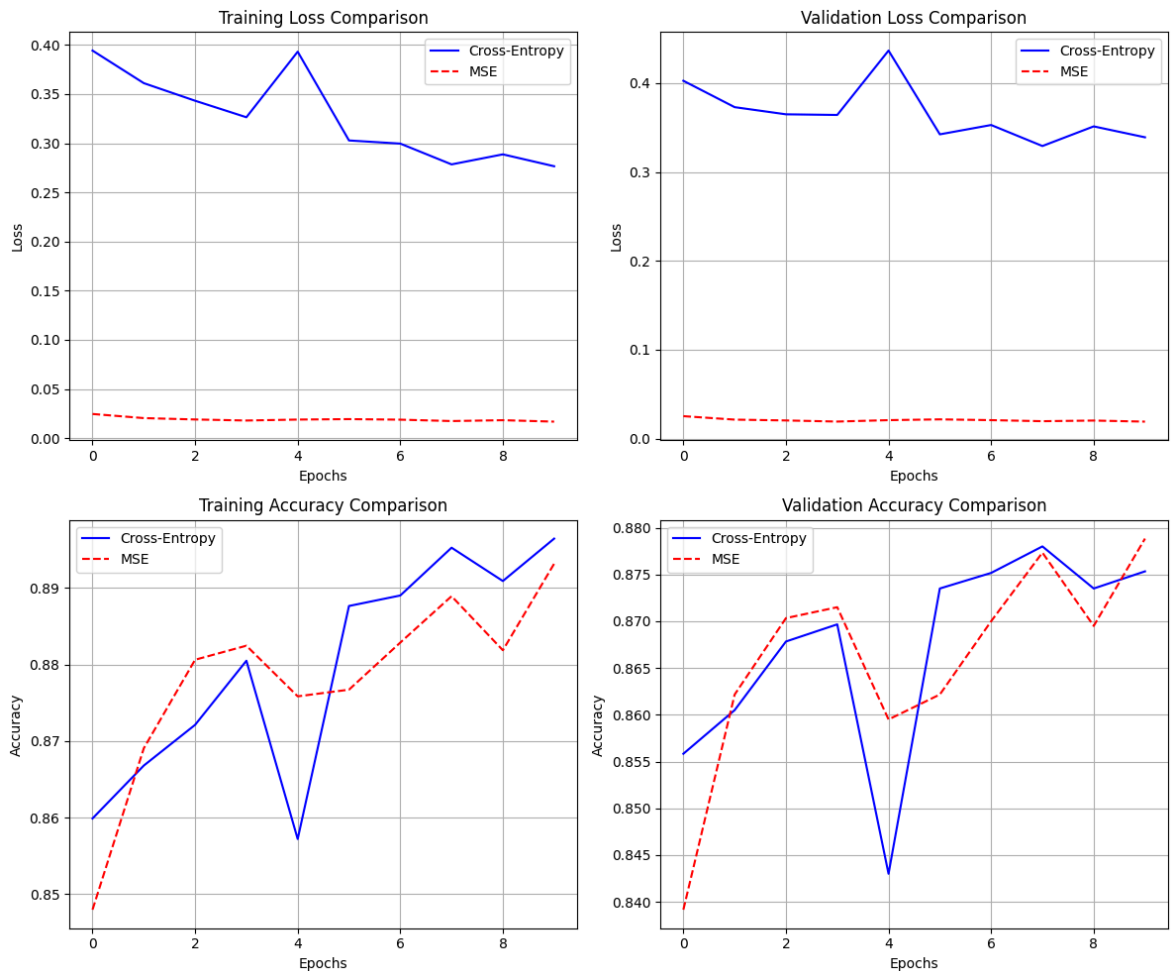
Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250317_152059-zcifxd1e

Syncing run **MSE_vs_CE_Comparison** to Weights & Biases (docs)

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/zcifxd1e>



```
In [19]: wandb.init(project="DeepLearning1", name="MSE_vs_CE_Comparison")

# Save plot as image
plt.tight_layout()
plot_path = "loss_accuracy_comparison.png"
plt.savefig(plot_path)

# Log image to wandb
wandb.log({"Loss & Accuracy Comparison": wandb.Image(plot_path)})

# Show plot
plt.show()
```

Changes to your `wandb` environment variables will be ignored because your `wandb` session has already started. For more information on how to modify your settings with `wandb.init()` arguments, please refer to [the W&B docs](#).

Ignoring project 'DeepLearning1' when running a sweep.

creating run (0.4s)

Tracking run with wandb version 0.19.7

Run data is saved locally in c:\Users\Preethi\Downloads\Assgn1_DL\wandb\run-20250317_114501-it654633

Syncing run **MSE_vs_CE_Comparison** to [Weights & Biases \(docs\)](#)

Sweep page: <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View project at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1>

View sweep at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/sweeps/qc8hcwnw>

View run at <https://wandb.ai/mm21b051-iitmaana/DeepLearning1/runs/it654633>

<Figure size 640x480 with 0 Axes>