

Online Workshop on Creating Neural Network Applications in Deep Learning

The CSI Student Branch of Maharaja Surajmal Institute organized two days online workshop on “*Creating Neural Network Applications in Deep Learning*” on 19th – 20th October, 2020.

We know that technology is getting more and more advanced day by day especially in the field of robotics and Artificial Intelligence. Neural Networks play an important role in Natural Language Processing as well as Expert Systems thus, it becomes an essential part of Artificial Intelligence. Thus, to learn what is Neural Network and how does it work, this online workshop was organized by the team on the online platform *Microsoft Teams*. We had received over 100 registrations from students, faculties, research scholars, and others from different streams of different colleges of India.

On day 1, the workshop started with a welcome address by **Dr. Amit Choudhary**, Associate Professor, Maharaja Surajmal Institute. It was followed by an address by Chief Guest of the Event, **Mr. Arvind Sharma**, Regional Vice President, Region I, Computer Society of India. He congratulates Convenors Ms Rhythm Choudhary & Mr. Manoj Kumar and Director Prof (Dr.) Rachita Rana for their efforts.



After the address, the workshop session started with the keynote speaker, **Mr. Devanshu Shukla**, Director, Hackveda Ltd. The workshop started with the basics of the technology so that the attendees who are new to it can also easily understand the workshop.

The workshop included various live coding examples and a demo of Neural Networks. The basics of Neural Networks were simplified for the attendees so that they can understand various libraries, packages that were being used to perform the various functions. It was explained that How Neural Networks are different from Data Analysis or Machine Learning. Various terminologies, algorithms, and real-life examples were used to explain so that it becomes useful and understandable for everyone. Various tools like Google Collab, Python were used to conduct the workshop.



The image is a composite of two parts. On the left is a blue poster for a workshop. At the top, it features the logos of Maharaja Surajmal Institute and CSI Student Branch, along with the text 'DEPARTMENT OF COMPUTER APPLICATIONS'. The main title is 'CREATING NEURAL NETWORK APPLICATIONS IN DEEP LEARNING', dated '19 - 20 OCTOBER 2020'. It lists several organizers: Mr. Arvind Sharma (Regional Vice President, Region I), Dr. Rachita Rana (Director, Maharaja Surajmal Institute), Devanshu Shukla (Director, Hackveda Ltd), Ms. Rhythm Choudhary (State Student Coordinator, Convenor), Mr. Manoj Kumar (Co-convenor), and Ms. Kanika Kundu (Co-ordinator). It also lists Student Organizers: Ankit Jee, Debaangshu Sen, Harsh Bisht, and Dhruv Rawat. A QR code for registration is at the bottom left, and the time and platform (2 PM - 4 PM, MS Teams) are at the bottom right. On the right is a screenshot of a live coding session in a Jupyter Notebook. The code defines a sigmoid function, a neural network class with methods for forward pass, backward pass, and training, and a main function to test the network. A small video inset in the top right corner shows a man, presumably Mr. Devanshu Shukla, speaking.

MAHARAJA SURAJMAL INSTITUTE
CSI STUDENT BRANCH
DEPARTMENT OF COMPUTER APPLICATIONS

Organizes Two Days Online Workshop
On
CREATING NEURAL NETWORK APPLICATIONS IN DEEP LEARNING
On
19 - 20 OCTOBER 2020

Mr. Arvind Sharma
Regional Vice President,
Region I

Dr. Rachita Rana
Director,
Maharaja Surajmal Institute

Devanshu Shukla
Director,
Hackveda Ltd

Ms. Rhythm Choudhary
State Student Coordinator
Convenor

Mr. Manoj Kumar
Co-convenor

Ms. Kanika Kundu
Co-ordinator

Student Organizers :
Ankit Jee Debaangshu Sen Harsh Bisht Dhruv Rawat

For registration:
<https://bit.ly/2020-workshop>

Time : 2 PM - 4 PM
Platform : MS Teams

```
def sigmoid(x):  
    return 1 / (1 + np.exp(-x))  
  
def sigmoid_derivative(x):  
    return x * (1 - x)  
  
class NeuralNetwork:  
    def __init__(self, input_nodes, hidden_nodes, output_nodes):  
        self.input_nodes = input_nodes  
        self.hidden_nodes = hidden_nodes  
        self.output_nodes = output_nodes  
        self.weights = None  
        self.biases = None  
        self.activation_function = sigmoid  
        self.activation_derivative = sigmoid_derivative  
  
    def initialize_weights(self):  
        self.weights = []  
        self.biases = []  
        for i in range(self.input_nodes):  
            for j in range(self.hidden_nodes):  
                self.weights.append(np.random.randn())  
            self.biases.append(np.random.randn())  
        for i in range(self.hidden_nodes):  
            for j in range(self.output_nodes):  
                self.weights.append(np.random.randn())  
            self.biases.append(np.random.randn())  
  
    def forward_pass(self, x):  
        self.z = np.dot(x, self.weights) + self.biases  
        self.a = self.activation_function(self.z)  
        return self.a  
  
    def backward_pass(self, y, error):  
        self.z = np.dot(self.a, self.weights) + self.biases  
        self.a_prime = self.activation_derivative(self.z)  
        self.error = error  
        self.weights = self.weights + self.error * self.a_prime  
        self.biases = self.biases + self.error * self.a_prime  
        print("Error at iteration", i, "is", error)
```

On day 2, the session was continued by **Mr. Devanshu Shukla**. After the session was completed, the vote of thanks was delivered by **Ms. Kanika Kundu**, Assistant Professor, Maharaja Surajmal Institute. Around 95+ people attended the live online workshop. Participants are very satisfied with the workshop and happy with the content taught to us in the workshop and it was very informative and helpful. The Workshop was organized by **Ms. Rhythm Choudhary (Convenor)**, **Mr. Manoj Kumar (Co-Convenor)** and **Ms. Kanika Kundu (Co-ordinator)** along with the Student Organizers: **Ankit Jee**, **Debaangshu Sen**, **Dhruv Rawat** and **Harsh Bisht**.