Guru Ghasidas Vishwavidyalaya

Summer Training Report

In

(Department of Computer Science and Engineering)

At

(National Institute of Technology, Raipur)
(29th May to 07th July, 2023)

Under Guidance of
Mr. Deepak Singh, Assistant Professor,
Computer Science Engineering Department, NIT Raipur

Submitted To:
Prof. Princy Matlani
Assistant Professor,
Department of CSE, SOSET,
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Submitted By:
Name : Abhigyan
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Batch: 2020 – 24
Institute: Guru Ghasidas Vishwavidyalaya

CERTIFICATE OF COMPLETION

Department of Computer Science and Engineering
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No./CSE/2023/ 543 Date: 28-07-2023

TO WHOM IT MAY CONCERN

This is to certify that **Abhigyan** (7th Sem, CSE) a student of Guru Ghasidas Vishwavidyalaya, Bilaspur has worked on project entitled **"Deep Learning Techniques in Sequence Data"** from 29th May,2023 to 07th July,2023 as a summer intern under my guidance.

During this period of his internship, he took keen interest in the assigned work. I wish him all success in his academic endeavours and life.

29/7/2023

Dr. Deepak Singh
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1. INTRODUCTION

1.1 Deep Learning Techniques

Deep learning uses artificial neural networks to perform sophisticated computations on large amounts of data. It is a type of machine learning that works based on the structure and function of the human brain. Deep learning algorithms train machines by learning from examples. Industries such as health care, eCommerce, entertainment, and advertising commonly use deep learning.

Defining Neural Networks

A neural network is a method in artificial intelligence that teaches computers to process data in a way that is inspired by the human brain. It is a type of machine learning process, called deep learning, that uses interconnected nodes or neurons in a layered structure that resembles the human brain. It creates an adaptive system that computers use to learn from their mistakes and improve continuously. Thus, artificial neural networks attempt to solve complicated problems, like summarizing documents or recognizing faces, with greater accuracy.

A neural network is structured like the human brain and consists of artificial neurons, also known as nodes. These nodes are stacked next to each other in three layers:

•**The input layer** - Information from the outside world enters the artificial neural network from the input layer. Input nodes process the data, analyse or categorize it, and pass it on to the next layer.

•**The hidden layer(s)** - Hidden layers take their input from the input layer or other hidden layers. Artificial neural networks can have a large number of hidden layers. Each hidden layer analyses the output from the previous layer, processes it further, and passes it on to the next layer.

•**The output layer** - The output layer gives the final result of all the data processing by the artificial neural network. It can have single or multiple nodes. For instance, if we have a binary (yes/no) classification problem, the output layer will have one output node, which will give