ARTIFICIAL INTELLIGENCE

Internship Report submitted in partial fulfillment of the requirements for the award of
the

degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING
(Internet Of Things)

By

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21R11A6917

Department of Computer Science and Engineering
(Internet Of Things)

Accredited by NBA

Geethanjali College of Engineering and Technology
(UGC Autonomous)
(Affiliated to J.N.T.U.H, Approved by AICTE, New Delhi)
Cheeryal (V), Keesara (M), Medchal.Dist.-501 301.

September-2023

Geethanjali College of Engineering and Technology

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(Internet Of Things)

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CERTIFICATE

This is to certify that the Internship Report entitled **"ARTIFICIAL INTELLIGENCE"** is a bonafide work done by **DANDUGULA MADHU (21R11A6917)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in "**Computer Science and Engineering (Internet of Things)**" from Jawaharlal Nehru Technological University, Hyderabad during the year 2023-2024.

HOD - IoT

Dr. K. Srinivas

Professor

Examiner
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Name:

Designation:

3rd page: Internship Certificate from Organization with Letter Head

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DECLARATION BY THE CANDIDATE

I, **DANDUGULA MADHU**, bearing Roll No. **21R11A6917**, hereby declare that the Internship Report entitled **"ARTIFICIAL INTELLIGENCE"** is submitted in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology** in **Computer Science and Engineering(IoT)**

This is a record of bonafide work carried out by me in {ACADEMOR } and the results embodied in this internship report have not been reproduced or copied from any source. The results embodied in this Internship Report have not been submitted to any other University or Institute for the award of any other degree or diploma.

DANDUGULA MADHU

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ACKNOWLEDGEMENT

I want to express my heartfelt appreciation for the fantastic opportunity you provided me during my internship. This experience has been immensely valuable to my academic and professional growth.

I'm grateful to Team Members for their guidance and support, which significantly contributed to my development. The collaborative environment at Academor has been inspiring.

This internship has bridged the gap between theory and practice, enhancing my skills and knowledge. I leave with newfound confidence and a deeper understanding of my field

DANDUGULA MADHU

21R11A6917

Introduction about Internship Organization

ACADEMOR IS AN E-LEARNING PLATFORM OFFERING STUDENTS A HOLISTIC LEARNING EXPERIENCE HELPING THEM BECOME INDUSTRY READY.

A major and vast concept to work to invent and create intelligence in artificial machines.

Learn simulation of human intelligence in machines (computers).

Concepts of machine learning, AI itself, practical concepts and many more.

Detailed teachings of topics such as neural network, deep learning, and reinforcement learning.

Training Schedule

PYTHON MAY AGENDA

Sno	Topic	Date
1	Introduction	08/05/2023
2	GitHub,Functions,Booleans and Modules	09/05/2023
3	Sequences, Iteration and String Formatting	10/05/2023
4	Dictionaries, Sets, and Files	15/05/2023
5	Exceptions, Testing, Comprehensions	21/05/2023
6	Advanced Argument Passing ,Lambda—functions as objects	24/05/2023
7	Object Oriented Programming	25/05/2023
8	More OO--Properties,Special methods	01/06/2023
9	Iterators,Iterables,and Generators	02/06/2023
10	Decorators, ContextManagers, Regular Expressions, and WrapUp	05/06/2023
11	Game Development	08/06/2023
12	Workingwith Numpy and Scipy	09/06/2023
13	Plotting using Matplotlib library	12/05/2023

ARTIFICIAL INTELLIGENCE MAY AGENDA

sno	topic	date
1	Intro to Machine Learning and types .	06/06/2023
2	Intro to Scikit Learn	06/06/2023
3	Over fitting and Underfitting	07/06/2023
4	Linear Regression	07/06/2023
5	Logistic Regression	13/06/2023
6	Support Vector Machine	13/06/2023
7	Face Recognition using OpenCV	14/06/2023
8	Basics of Deep Learning and Neural Network	14/06/2023
9	Artificial Neural Network Regression	13/06/2023
10	Optical Character Recognition	13/06/2023
11	Fuzzy sets and systems, Operations on Fuzzy sets,Fuzzy relations,Membership functions,Fuzzy rulegeneration,De Fuzzification,Fuzzy controllers	20/05/2023

ABSTRACT

This report explores the world of Artificial Intelligence (AI) and its evolving applications, with a specific focus on its relevance within the logistics sector. As the Head of ICT at a substantial logistics firm, we embark on a journey to understand the potential and ethical considerations associated with incorporating AI-based solutions into our service portfolio. We investigate five diverse AI applications in logistics, considering both domestic and global use cases for insights. Drawing from these insights, we present three AI-powered applications aligned with our organization's growth strategy for the next five years. We meticulously assess these solutions' merits, drawbacks, and ethical ramifications, placing a significant emphasis on ethical AI adoption. Our recommendations encapsulate a strategic approach to integrating AI while ensuring ethical boundaries are upheld. This report serves as a guide for executive decision-makers, providing a blueprint for the responsible and purposeful integration of AI in our logistics operations, reinforcing our commitment to ethical, socially responsible, and legally compliant AI utilization.

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1.Introduction

Artificial Intelligence (AI) stands as one of the most transformative technological advancements of the 21st century. As the digital realm continues to evolve, AI has emerged as a driving force, reshaping industries, economies, and societies. This internship served as a gateway into the fascinating world of AI, offering a firsthand experience in harnessing the potential of intelligent machines.

The pursuit of AI encompasses a broad spectrum of applications, from self-driving cars to advanced healthcare diagnostics, natural language processing, and personalized content recommendations. The rapid evolution of AI algorithms, fueled by the availability of extensive datasets and increasingly sophisticated computing resources, has ushered in an era of unprecedented innovation.

This internship provided a unique opportunity to dive into this dynamic field, exploring not only the theoretical foundations of AI but also the practical aspects of implementing AI solutions to solve real-world challenges. The journey encompassed a comprehensive examination of AI technologies and their impact across diverse sectors.

Throughout this report, we will delve into the technologies and tools leveraged during the internship, delve into specific projects and duties, reflect on the insights gained from this experience, and conclude with a broader perspective on the role of AI in shaping the future of work, industries, and society. The internship experience has been a stepping stone, equipping with not only technical skills but also a profound appreciation for the ethical and societal implications of AI, making it an invaluable learning experience.

2. Related work/ Technologies used

During my AI internship, I had the opportunity to explore a wide range of cutting-edge technologies that serve as the foundation of this rapidly evolving field. Among these, machine learning frameworks like TensorFlow and PyTorch played a central role in our projects. These frameworks enabled me to create, train, and deploy complex neural networks for various AI tasks, such as image recognition and natural language processing. In the domain of natural language processing (NLP), I gained hands-on experience with tools like NLTK and spaCy, which proved indispensable for tasks involving human language, including chatbots, sentiment analysis, and language translation.

Furthermore, I delved into computer vision libraries like OpenCV, which became invaluable when working on projects related to image and video analysis. These skills were crucial for tasks like object detection, facial recognition, and autonomous navigation.

Throughout the internship, proficiency in programming languages, particularly Python, was paramount. Python's adaptability and extensive libraries made it the primary choice for tasks such as data preprocessing, model development, and the creation of AI-driven applications.

3. Work done

During my AI internship, I had the privilege of immersing myself in a diverse set of topics that are integral to the field of Artificial Intelligence (AI). These learnings spanned the spectrum of machine learning, deep learning, computer vision, and even fuzzy logic. In this report, I will provide an overview of the key topics I covered and their significance in AI.

In the initial phase of my internship, I gained a comprehensive understanding of machine learning and its various types, including supervised, unsupervised, and reinforcement learning. This foundational knowledge provided me with insights into the principles that underlie AI systems and their real-world applications.

I was introduced to Scikit-Learn, a prominent machine learning library. Scikit-Learn played a crucial role in our projects, allowing us to leverage a wide range of machine learning algorithms and tools efficiently. Its user-friendly interface and extensive documentation made it an essential tool for implementing machine learning models.

Overfitting and underfitting were important concepts I learned to identify and mitigate. These phenomena can significantly impact the performance of machine learning models. I gained valuable insights into techniques such as cross-validation and regularization to address these challenges effectively.

Linear regression was one of the fundamental regression techniques I explored. I learned how to model relationships between variables and make predictions based on linear equations. Practical applications of linear regression were demonstrated, including its use in predicting numerical values.

Logistic regression, a powerful classification algorithm, was another key topic I delved into. I grasped its utility in solving binary and multi-class classification problems. We also discussed the logistic sigmoid function, which is central to this algorithm.

Support Vector Machines (SVMs) were introduced as versatile tools for classification tasks. I learned about SVM's ability to find optimal hyperplanes to separate data points, making it a valuable tool for various machine learning projects.

In the domain of computer vision, I had the opportunity to work on face recognition using OpenCV. This practical experience allowed me to apply machine learning concepts to real-world problems, understanding the importance of image analysis and feature extraction.

Deep learning and neural networks emerged as a fascinating area of study. I explored the architecture of neural networks, the role of activation functions, and their ability to tackle complex tasks, including image recognition and natural language processing.

Artificial Neural Networks (ANNs) were employed for regression tasks. I learned how to construct neural networks for regression problems and witnessed their effectiveness in modeling and predicting continuous data, a skill I found valuable for various projects.

Optical Character Recognition (OCR) was another exciting application of AI I encountered. I gained insights into the process of converting handwritten or printed text into machine-encoded text, a crucial technology with diverse applications.

Fuzzy logic and fuzzy sets provided a unique perspective on handling uncertainty in decision-making. I explored the operations on fuzzy sets, fuzzy relations, membership functions, and fuzzy rule generation, which opened up a world of possibilities in dealing with imprecise data.

The concept of fuzzy controllers and de-fuzzification extended the application of fuzzy logic. I learned how these systems can be used for control and decision-making in various domains, from automotive to industrial processes.

Code For Dice Rolling

```python
import random

NUM_PLAYERS = 4

BOARD_SIZE = 40

WINNING_POSITION = BOARD_SIZE - 1

NUM_DICE_SIDES = 6


player_positions = {}

def initialize_positions():

    for player in range(NUM_PLAYERS):

        player_positions[player] = 0


def roll_dice():

    return random.randint(1, NUM_DICE_SIDES)

def has_won(player):

    return player_positions[player] >= WINNING_POSITION

def move_player(player, steps):

    player_positions[player] += steps

    if player_positions[player] >= BOARD_SIZE:

        player_positions[player] = player_positions[player] % BOARD_SIZE
```

```python
def play_game():
    initialize_positions()

    while True:
        for player in range(NUM_PLAYERS):
            print("\nPlayer", player + 1, "'s turn")
            input("Press enter to roll the dice...")
            dice_roll = roll_dice()
            print("You rolled a", dice_roll)

            move_player(player, dice_roll)

            print("Player", player + 1, "'s position:", player_positions[player])

            if has_won(player):
                print("Player", player + 1, "has won!")
                return
play_game()
```

```
Player 1 's turn
Press enter to roll the dice...
You rolled a 3
Player 1 's position: 3

Player 2 's turn
Press enter to roll the dice...
You rolled a 4
Player 2 's position: 4

Player 3 's turn
Press enter to roll the dice...
You rolled a 5
Player 3 's position: 5

Player 4 's turn
Press enter to roll the dice...
```

LIST OF FIGURES AND SCREENS

```
        return True, label_text

In [17]: print("Predicting images...")

        test_img1 = cv2.imread("test-data/test1.jpg")
        detected1, predicted_img1 = predict(test_img1)
        if detected1:
            print('Image 1', predicted_img1)
        else:
            print(predicted_img1)

        print('----------------')

        test_img2 = cv2.imread("test-data/test2.webp")
        detected2, predicted_img2 = predict(test_img2)
        if detected2:
            print('Image 2', predicted_img2)
        else:
            print(predicted_img2)
        print("Prediction complete")

        # cv2.waitKey(0)
        # cv2.destroyAllWindows()

        Predicting images...
        Image 1 Akshay Kumar
        ----------------
        Image 2 Marc Zuckerberg
        Prediction complete

In [ ]:
```
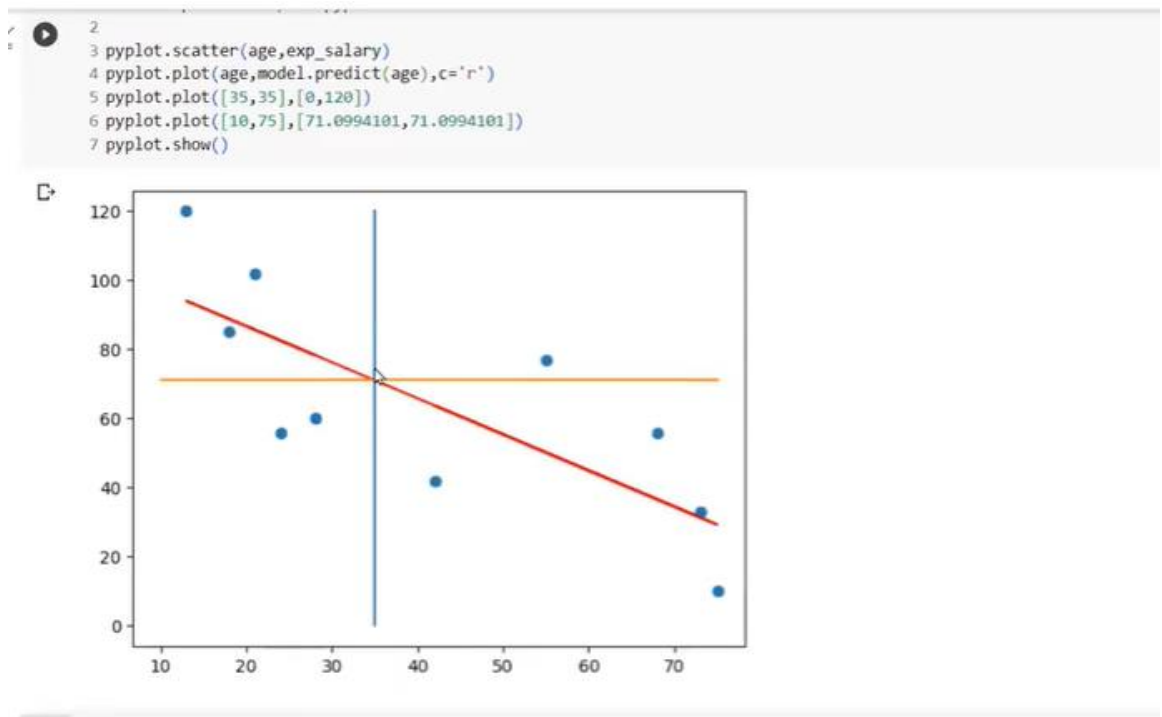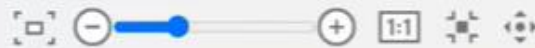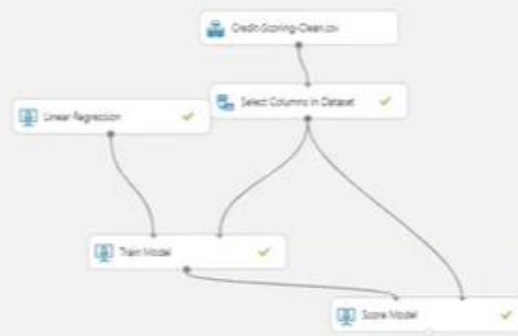
```
2
3 pyplot.scatter(age,exp_salary)
4 pyplot.plot(age,model.predict(age),c='r')
5 pyplot.plot([35,35],[0,120])
6 pyplot.plot([10,75],[71.0994101,71.0994101])
7 pyplot.show()
```

4. Learning after Internship

My AI internship was a transformative journey that contributed significantly to both my professional and personal growth. It fundamentally changed my perspective on AI by highlighting its practical applications in solving real-world problems. While my academic education provided a solid theoretical foundation, this internship emphasized the importance of practical implementation.

A crucial lesson I took away from this experience is that AI is a continuously evolving field. To stay relevant, I recognized the necessity of ongoing learning. I've since proactively pursued additional courses, workshops, and kept up with the latest research developments to remain at the forefront of AI advancements.

Collaborating within a team during the internship underscored the significance of effective teamwork and communication in the AI industry. Our projects required seamless cooperation, instilling in me the value of open dialogue and collaboration with colleagues—a lesson that remains invaluable in my current role.

Ethical considerations in AI were also a prominent aspect of my internship. I gained a deep understanding of the importance of ethical data handling and model usage. Today, I am committed to ensuring ethical practices in my work and adhering to established guidelines.

Furthermore, the internship honed my problem-solving skills. I learned how to approach complex challenges by breaking them down into manageable steps. This problem-solving methodology continues to be an essential asset in addressing various issues encountered in my current job.

5. Conclusion:

My AI internship has been an enlightening experience, offering a comprehensive view of the AI landscape. I now possess a strong foundation in machine learning, deep learning, computer vision, and fuzzy logic, which I can apply to a wide range of AI projects. These learnings have equipped me with valuable skills and knowledge to contribute effectively to the dynamic and rapidly evolving field of AI.

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