DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

(Data Science)

DAYANANDA SAGAR COLLEGE OF ENGINEERING

AN AUTONOMOUS INSTITUTE AFFILIATED TO VTU
APPROVED BY AICTE & UGC, ACCREDITED BY NAAC WITH 'A' GRADE

Mini Project Synopsis

On

"GreenBot : A ChatBot for Horticulture Enthusiasts and Home Gardeners"

Submitted as a part of the first year(Second Semester) mini-project of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

(DATA SCIENCE)

Submitted by

USN   NAME
1DS23CD004 Aiden Tomas George
1DS23CD012 Ashlesh
1DS23CD027 Kushagra Shukla
1DS23CD029 Madhuri

Under the guidance of

Dr. Rashmi S

HOD, Dept. of CSE(Data Science), DSCE

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TITLE OF THE PROJECT	GreenBot : A ChatBot for Horticulture Enthusiasts and Home Gardeners
PROJECT TIMELINE (Tentative Start and End Date)	APR- JUL 2024
FIELD OF PROJECT	Artificial intelligence for enhancing home gardening practices
OBJECTIVE OF THE PROJECT	GreenBot aims to offer guidance and support for home gardening and horticulture queries using artificial neural networks and natural language processing technologies.
PROBLEM STATEMENT	Addressing lack of accessible guidance for urban horticulture enthusiasts and home gardeners..
INTENDED BENEFICIARIES OF THE PROJECT	Urban horticulture enthusiasts, home gardeners, and anyone seeking accessible gardening advice.
BASE PAPERS/ RELATED WORK	Eleni Adamopoulou, & Lefteris Moussiades (2020). *An Overview of Chatbot Technology* (pp. 373-383). Springer, Cham. https://link.springer.com/chapter/10.1007/978-3-030-49186-4_31 Farm Sector Policy Department, NABARD (2018). *Plantation and Horticulture*. https://nabfoundation.in/pdf/Plantation-and-Horticulture.pdf
SOFTWARE/HARDWARE REQUIREMENTS	**Software Requirements:** • Integrated Development Environment (IDE) (e.g., Visual Studio Code) • Python (Programming Language) • Basic Python libraries (e.g., numpy, pandas, countvectorizer) **Hardware Requirements:** • Personal Computer or Laptop • Minimum 4GB RAM • Processor: Intel i3 or equivalent • Sufficient Storage for software and datasets

BACKGROUND OF PROJECT WITH REGARD TO THE DRAWBACK ASSOCIATED WITH EXISTING PROJECT:

Existing resources for home gardening and horticulture often lack coherence, leaving enthusiasts and home gardeners without efficient solutions to address their specific needs. Traditional sources may offer generic advice but fail to provide tailored recommendations or interactive platforms for effective communication. GreenBot aims to bridge this gap by offering coherent assistance, expert advice, and interactive communication channels, revolutionising how gardening enthusiasts and home gardeners engage with horticulture knowledge and support.

ABSTRACT:

GreenBot will be an innovative chatbot designed to revolutionize home gardening and horticulture. It aims to provide personalized assistance and expert advice to users, addressing the current lack of coherent resources in the field. By leveraging artificial neural networks and natural language processing, GreenBot will facilitates interactive communication, offering tailored recommendations and guidance. Through this project, we aim to enhance the accessibility and effectiveness of gardening knowledge, benefiting enthusiasts and home gardeners

PROJECT METHODOLOGY:

1.   **Selection of Core Technologies**

   • **Programming Language**: Use Python for its robust libraries and tools suitable for NLP and chatbot development.
   • **Artificial Neural Networks (ANN)**: Chosen for their capability to recognize patterns and provide predictive insights, essential for analyzing user queries and offering relevant gardening advice.
   • **Natural Language Processing (NLP)**: Selected to understand and interpret user inputs in natural language, ensuring effective and meaningful interactions between users and GreenBot.

2.   **Data Collection**
   • Gather extensive datasets from reliable online sources, including gardening websites, articles, and forums, covering topics like plant care, soil management, and pest control.

3. **Data Preprocessing**
- Clean and preprocess the collected data to eliminate inconsistencies and ensure high-quality input for the models.
- Convert raw text data into a structured format suitable for training ANN and NLP models.

4. **Training of Artificial Neural Networks**
- Design an ANN architecture comprising interconnected nodes organized into layers.
- Train the ANN models using the preprocessed datasets through iterative learning processes.
- Optimise the parameters of the ANN models to enhance learning efficiency and prediction accuracy.

5. **Integration of Natural Language Processing**
- Implement NLP techniques for tokenization, parsing, and semantic analysis to process and understand user queries.
- Develop a mapping system to relate processed user inputs to specific intents or actions using NLP methods.

6. **Model Validation and Evaluation**
- Assess performance metrics such as accuracy, precision, and recall to gauge model effectiveness.
- Fine-tune the models based on validation outcomes to improve overall performance.

7. **Development of GreenBot Interface**
- Create a user-friendly interface for GreenBot that allows users to interact with the chatbot through natural language queries.
- Integrate the trained ANN and NLP models into GreenBot's architecture to facilitate seamless communication and response generation.

8. **Testing and Deployment**
- Conduct thorough testing of GreenBot with various user queries to ensure robustness, reliability, and user satisfaction.
- Deploy GreenBot on accessible platforms such as web browsers and mobile applications, making it easily available to users.

REFERENCES:

Eleni Adamopoulou, & Lefteris Moussiades (2020). *An Overview of Chatbot Technology* (pp. 373-383). Springer, Cham. https://link.springer.com/chapter/10.1007/978-3-030-49186-4_31

Farm Sector Policy Department (2018), *Sectoral Paper on Plantation and Horticulture*. https://nabfoundation.in/pdf/Plantation-and-Horticulture.pdf

Carlos Gershenson (2003), *Artificial Neural Networks for Beginners*, https://www.researchgate.net/publication/1956697_Artificial_Neural_Networks_for_Beginners

Name and Signature of the Students   Signature of Guide with date

Project Coordinators   **HOD-CSE (Data Science)**