Construction of a Plant Species Recognition Program in Vietnam

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***Abstract*—This thesis focuses on developing a program for recognizing plant species in Vietnam using deep learning techniques. The author built a program that achieved promising results for plant recognition but noted that the accuracy was not high. The work involved understanding the process of plant recognition, using deep learning tools, and applying transfer learning to achieve satisfactory results. The thesis also discusses the limitations and future directions for improvement. The program was trained on a dataset of plant images to recognize various species, but the accuracy was found to be low, indicating the need for further research and improvements. The author proposed expanding the dataset and studying more advanced deep learning techniques to enhance the model's performance.**

***Index Terms*—plant recognition, deep learning, transfer learning, neural networks, image classification, Vietnam**

I. Introduction

The thesis provides a comprehensive overview of plant recognition techniques, including traditional machine learning methods and deep learning approaches. It covers the basics of neural networks, their architectures, and the role of transfer learning in improving model performance. The author aimed to develop a program that could accurately identify plant species from images, contributing to the field of computer vision and plant identification. The work involved understanding the process of plant recognition, using deep learning tools, and applying transfer learning to achieve satisfactory results. The author also discussed the limitations and future directions for improvement, emphasizing the need for further research and improvements [1]. Published books on the methods and subject of this project provide context for this English summary [8]. Published articles on the methods and subject of this project provide context for this English summary [9]. Published articles on the methods and subject of this project provide context for this English summary [10].

II. Methods

The methods section describes the use of deep learning libraries such as TensorFlow, NumPy, Matplotlib, and Keras. The author utilized Google Colab for training and testing the model. Transfer learning was applied to enhance the model's performance. The program was trained on a dataset of plant images to recognize various species. However, the accuracy of the model was found to be low, indicating the need for further research and improvements. The author proposed expanding the dataset and studying more advanced deep learning techniques to enhance the model's performance [1].

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III. Results

The program achieved promising results for plant recognition, but the accuracy was not high. The author noted that further research and improvements are needed to enhance the model's performance. The model was trained on a dataset of plant images, but the accuracy was found to be low, indicating the need for further research and improvements. The author proposed expanding the dataset and studying more advanced deep learning techniques to enhance the model's performance [1].

IV. Discussion

The author discussed the limitations of the current model, including its low accuracy, and proposed future directions such as further study of deep learning techniques, expanding the dataset, and improving the model's accuracy. The author highlighted the need for more comprehensive datasets and advanced deep learning methods to achieve higher accuracy in plant recognition. The limitations included the limited size and diversity of the training dataset, which affected the model's performance. The author suggested that future work should focus on collecting more diverse and larger datasets to improve the model's generalization ability [1].

V. Conclusion

The author concluded that the program was successfully developed, but it needs improvements. The experience gained from this project will be valuable for future research in plant recognition. The author proposed expanding the dataset and studying more advanced deep learning techniques to enhance the model's performance. The author also emphasized the importance of collecting more diverse and larger datasets to improve the model's generalization ability [1].

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