

# **MEDICINAL PLANTS IDENTIFICATION WITH ENHANCED AUTHENTICITY BY IMAGE PROCESSING USING DEEP LEARNING TECHNIQUES AND SUPPLY CHAIN INTEGRITY**

## **MENTOR**

**Dr.P.Shanmugam,M.Tech.,Ph.D.,**  
**Associate Professor,**  
**Department of CSE,**  
**Rajalakshmi Engineering College,Chennai**

## **TEAM MEMBERS**

<b>VARUNESH B</b>	<b>210701303</b>
<b>VINOTH N</b>	<b>210701311</b>
<b>VISHAL B</b>	<b>210701312</b>

# ABSTRACT

The Proposed System utilizes Convolutional Neural network(CNN) image processing algorithm and accurately identify the medicinal plants based on their visual characteristics with enhanced authentication and implementing the supply chain integrity for the identified Medicinal plants to enhance common people identification and awareness.

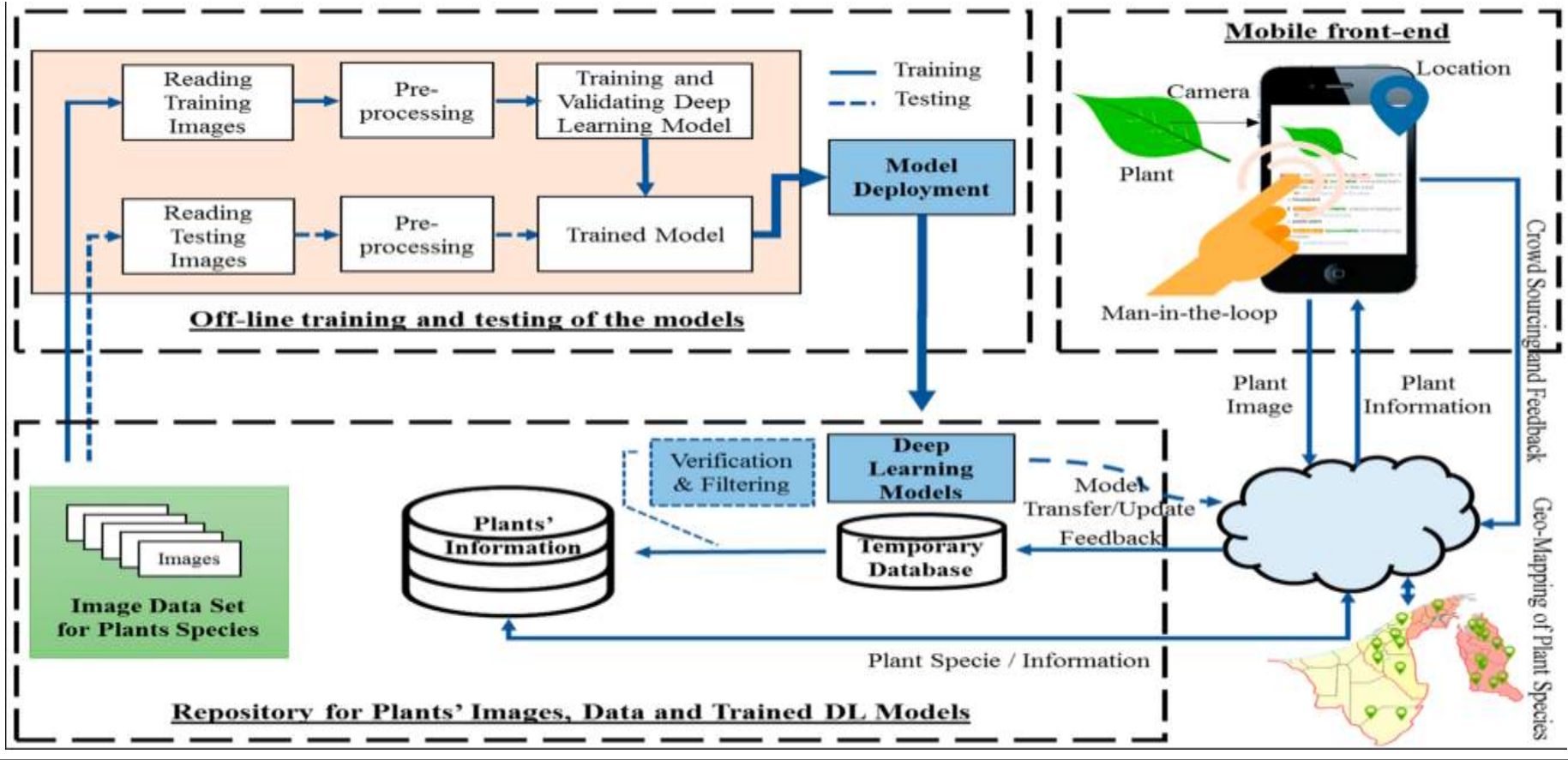
# EXISTING SYSTEM

The existing system uses deep learning algorithms, the system employs image processing techniques to accurately identify medicinal plants, ensuring authenticity with accuracy of **93.56%** but the dataset used to train contains only **10 classes** of medicinal plants. By analyzing intricate features of plant images, the system can distinguish between different species with average precision, reduces the risks associated with **misidentification**. The integration of **supply chain integrity** is the major drawback in the existing system. There is **no verification** and **authentication** of the medicinal plants products.

# PROPOSED SYSTEM

The Proposed system uses cutting-edge deep learning algorithms, the system employs image processing techniques to accurately identify medicinal plants, ensuring authenticity by using dataset of **more than 100 classes** of medicinal plants with the accuracy of **97.97%**. The integration of supply chain integrity mechanisms ensures **transparency and traceability** of products. The system not only safeguards the **integrity of medicinal plant products** but also fosters **trust among consumers** and promotes sustainable practices within the industry.

# SYSTEM ARCHITECTURE



# MODULES

- **DATASET COLLECTION AND PREPROCESSING**

The Collection of diverse dataset which covers various varieties of Medicinal Plant Species all over the world by covering inclusively with the **varying angles** and lightening. Preprocessing of Dataset is carried out with all necessary requirements for Identification process.

- **TRAINING AND TESTING DATA**

The Dataset is split into training, validation, and test sets **70%** training, **20%** validation, **10%** testing to evaluate model performance effectively.

# MODULES

- **IMAGE PROCESSING - CNN ALGORITHM**

**VGG16 Model** is chosen for performing Image Processing technique for Identification of Medicinal plants with the training and testing data for accurate identification.

- **SUPPLY CHAIN INTEGRITY**

The Identified Medicinal Plants is further suggested with the **products of the identified plants** to the users by encouraging the upliftment of the supply chain of the **Herbal Products**.

# IMPLEMENTATION PROTOTYPE

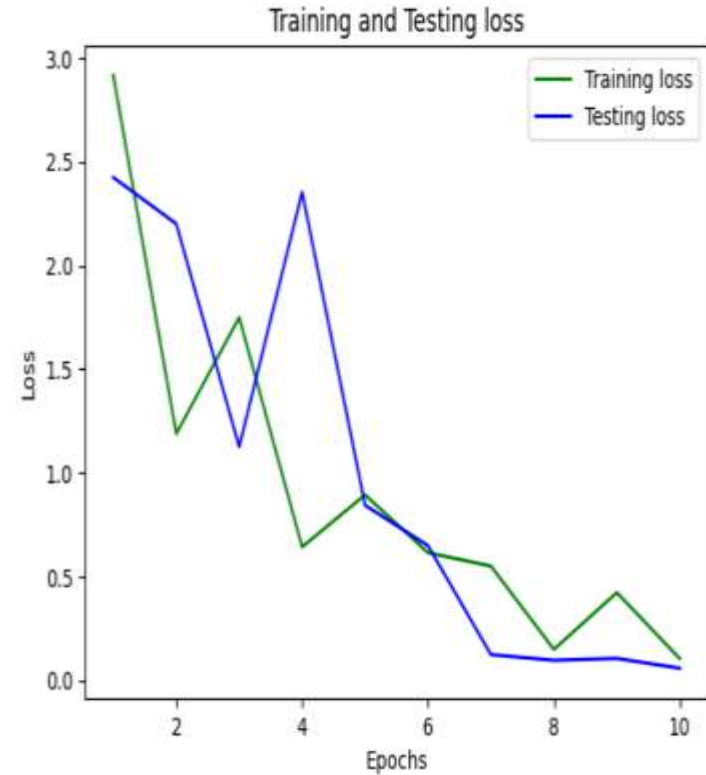
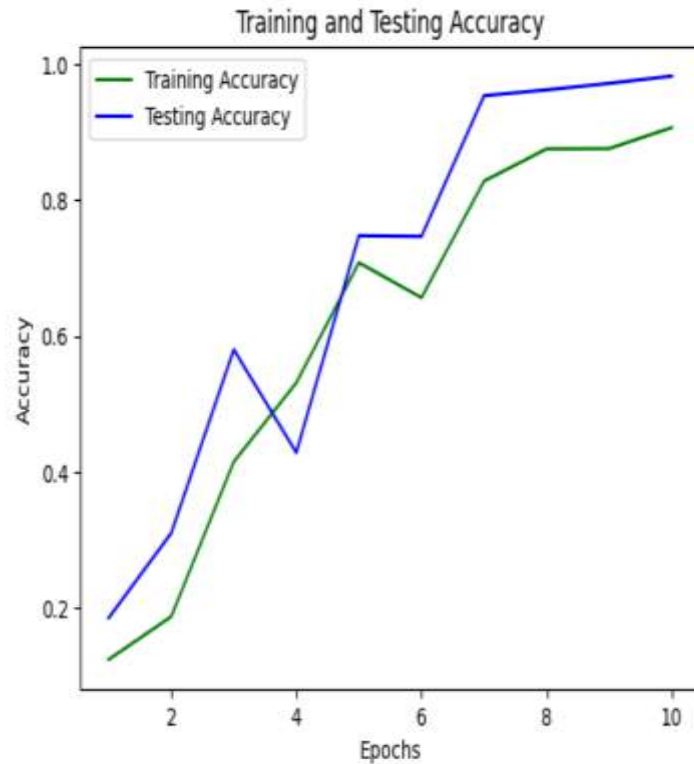




# RESULTS AND DISCUSSION

The implementation of a Medicinal Plants Identification by Image Processing Using Deep Learning Techniques and Implementing Supply Chain Integrity utilizing **CNN Algorithm** represents a remarkable result by achieving **97.97%** accuracy in identifying medicinal plants, whereas existing system gives only **93.56%**. By delivering dependable and efficient quality assurance and traceability solutions, the proposed model helps to promote consumer health, encourage sustainable herbal medical practices, and reduce fraudulent activity in the herbal supply chain.

# TRAINING AND TESTING GRAPHS



# CONCLUSION

The proposed model is an important step forward in the fields of herbal medicine and supply chain management. The proposed idea effectively addressed significant difficulties in medicinal plant identification, **authenticity** verification, and **supply chain transparency** by combining cutting-edge technologies such as image processing, deep learning, and supply chain. The proposed approach has exhibited extraordinary accuracy, reaching a **97.97%** identification rate for medicinal plants using visual characteristics retrieved from photos. Greatly paves the way for **pharmaceutical industry** and **Global Marketing**.

# FUTURE ENHANCEMENTS

- **Integration of IoT Devices**

Integrating IoT devices in the supply chain as future enhancement paves the way to monitor and record **environmental** conditions during plants surplus conditions as stocks and transportation for Supply Chain mechanisms.

- **Crowdsourced Verification**

Enhancing a platform for crowdsourced verification where users can contribute to **verifying** the **correctness** of plant identifications, which leads to better understanding of the identification.

**THANK YOU!**