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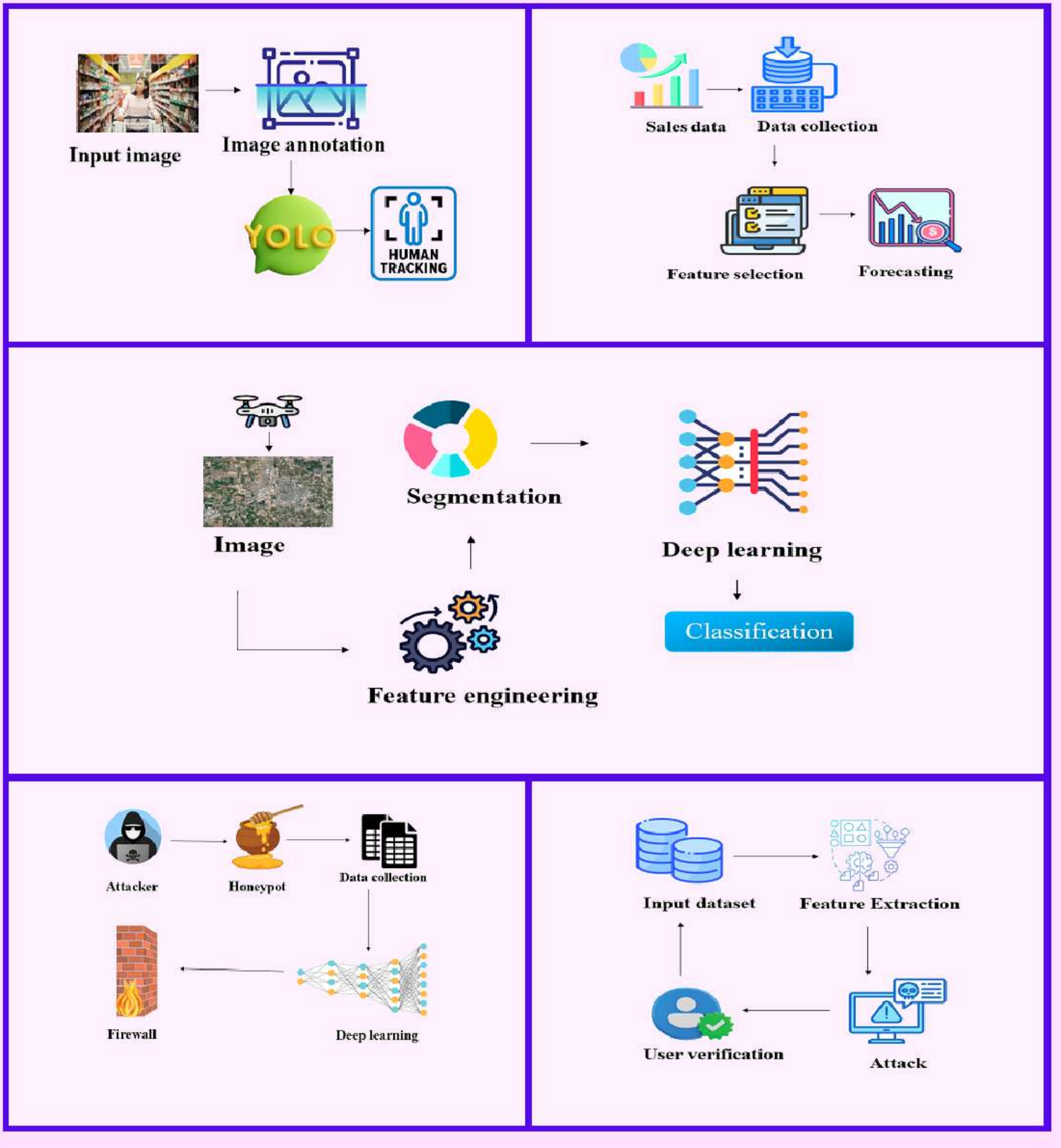

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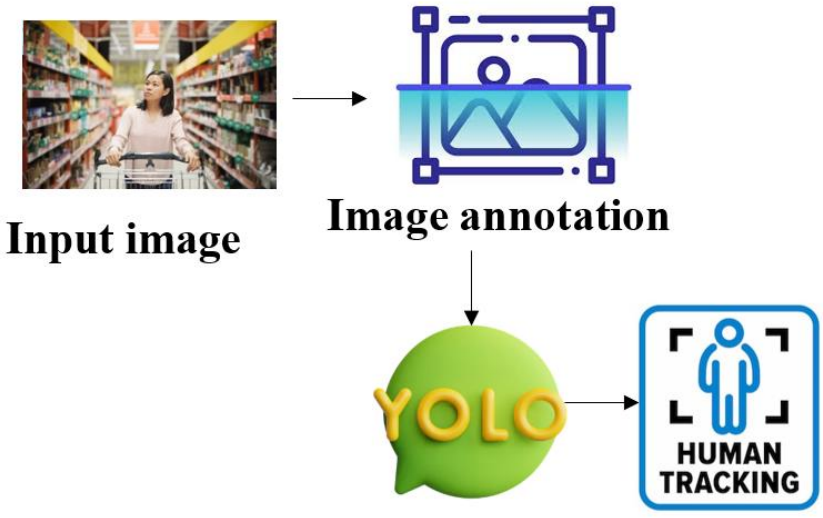
1. DEEP LEARNING MODEL FOR TRACKING HUMAN BEHAVIOR IN SUPERMARKET THROUGH CCTV FOOTAGE

Aarthi Gopalakrishnan, A. Neelima and C. Priya

Abstract – In recent years, video surveillance has become increasingly dependent on automated human tracking via camera networks. Not only is it difficult to follow people over camera networks since people's appearances change over time, but there are also a lot of real-world uses for this technology, including security surveillance, retail, and medical. Due to differences in appearance brought on by changes in viewpoint and illumination, background, occlusion, non-rigid deformations, and intra-class heterogeneity in shape and position, human tracking is one of the most difficult components of the task. In this work a novel deep learning-based model is proposed to overcome these challenges. The input CCTV images are -pre-processed using Wienmed filter and annoted to remove the noise and blurriness in the image. The enhanced images are fed into the YOLO V4 model for tacking the humans in the supermarket with high rate of accuracy. According to the result, the proposed model attains 99.51% of accuracy rate for the detection of human tracking. The modified YOLOV4 yields 99.51% accuracy as opposed to Mask RCNN, YOLO V2, and YOLO V3 are 0.68%, 0.65%, and 1.16%. The CNN, Deep SNORT and YOLO V5 are all outperformed by the proposed model in terms of overall accuracy by 24.51%, 12.51%, and 3.21%, respectively.

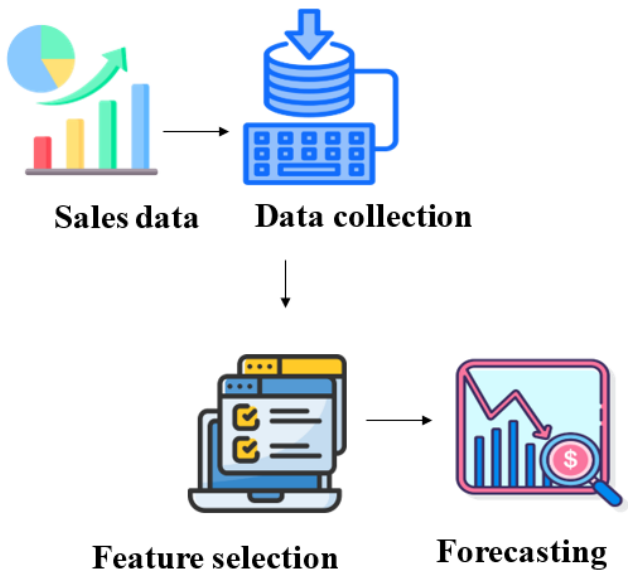


Keywords – Human tracking, CCTV images, YOLO V4, Deep learning.

2. WALMART FULFILLMENT MANAGEMENT SERVICES ON SUPPLY CHAIN PERFORMANCE OPTIMIZATION USING DEEP LEARNING BASED DECISION MAKING

Ramya Thatikonda

Abstract – This research manuscript presents a comprehensive methodology for optimizing supply chain performance at Walmart Fulfillment Management Services (FMS) through deep learning-based decision-making. The study begins with the acquisition of critical supply chain data, encompassing inventory levels, order histories, lead times, and external market trends, which are aggregated from diverse sources to form a robust dataset. Following data acquisition, pre-processing steps, including data normalization, are applied to ensure consistency and comparability across varying scales, thereby enhancing data quality for subsequent analyses. The Parrot Optimization Algorithm (POA) is then utilized to identify and extract optimal features that significantly influence supply chain performance, effectively reducing dimensionality and enhancing the efficiency of the predictive model. Demand forecasting is performed using the Simple Recurrent Unit (SRU) model, a deep learning technique adept at recognizing complex patterns and dependencies within time series data. This approach empowers Walmart FMS to make data-driven decisions that improve supply chain responsiveness and overall operational effectiveness, ultimately leading to increased customer satisfaction. The findings demonstrate the potential of deep learning methodologies in transforming supply chain management practices.

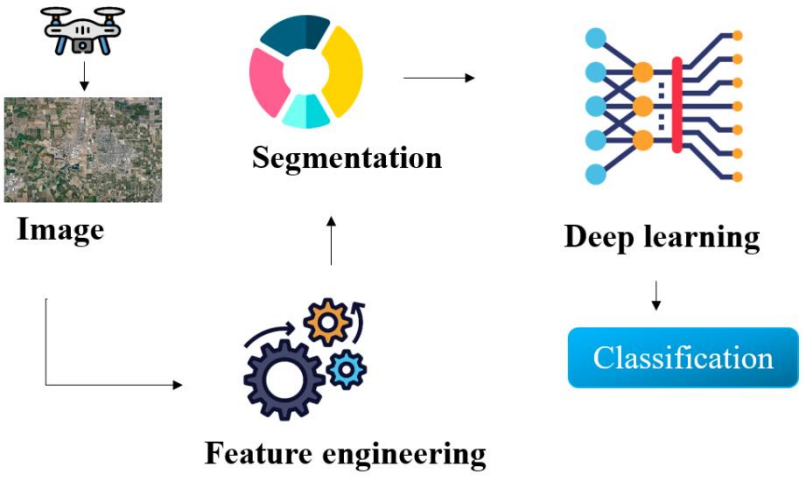


Keywords – Walmart Fulfillment Management Services, Supply Chain Performance, Deep Learning, Parrot Optimization, Feature Selection, Normalization, Simple Recurrent Unit.

3. DEEP LEARNING-BASED CLASSIFICATION OF LICHENS IN WESTERN GHATS USING AERIAL IMAGES

M. Dhipa, Christopher John Clement Singh, E. Michael Priya and T. Shunmugavadivoo

Abstract – Lichens are interesting composite organisms that evolved and diversified after a symbiotic association between algae and fungi and lichens are estimated to cover roughly 10% of terrestrial ecosystems. The limited number of images in datasets makes it difficult to classify the lichen classes and the dependability rate of the existing study is still quite low. In this paper, a novel deep-learning model is proposed for the classification of lichens using aerial images. The input aerial images are gathered from western ghats and the collected images are pre-processed utilizing a Contract stretching adaptive histogram equalization (CSAHE) filter to increase the image quality. The Mask RCNN model is implemented to extract the relevant features from the images and also segment the region of the enhanced images. The Deep neural network is used for classifying the lichens from the western ghats. According to the result, the proposed model attains a 99.12% success rate for the classification of lichens. The proposed Mask RCNN enhances overall accuracy of 2.53%, 6.39%, and 1.88%, better than RNN, CNN, and RCNN. The proposed DNN improves its reliability by 8.13%, 4.45%, and 0.87% better than FNN, GNN, and DBN respectively. The proposed model enhances the overall accuracy of 38.33%, 10.12%, and 4.12% better than DCNN, CNN, and XGBOOST.

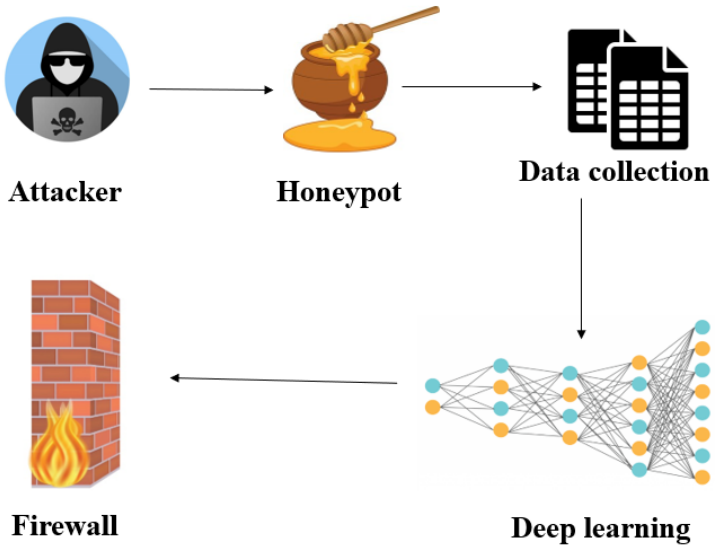


Keywords – Deep neural network, Lichens, Contract stretching adaptive histogram equalization, Mask RCNN.

4. DEEP FIRE: HONEYPOT COMBINED DEEP LEARNING BASED FIREWALL TUNING FOR ENHANCING CYBERSECURITY

Vishnu Karthik Ravindran

Abstract – Cyber security of internet-based cloud networks is a major concern for companies. Networks are always open to intrusions from both inside and outside of organizations. However, using traditional techniques to identify behavioral changes or malicious attacks is challenging. In this paper, a novel DEEP learning-based FIREwall tuning (Deep Fire) method has been developed to integrate deep learning and honeypot in order to mitigate and prevent the attacks of cloud systems. In order to identify ransomware activity and attack patterns, Apache spark engine is used which combines information from TrAck Replay Evaluate (TAPE) systems. The proposed technique uses Convolutional neural Network (CNN) for detecting the intrusion into two classes such as attack and normal. The proposed system has been evaluated using python simulator. The proposed technique has been evaluated using specific parameters such as detection accuracy and false alarm rate. The proposed system achieves higher detection accuracy of 22.6%,16.6% and 2.38% than the existing systems such as IDPS, virtual machine (ICI) and Honeypot based IDS technique respectively. By utilizing Apache Spark, the proposed DEEP-FIRE correlates network features, host attributes, and various events from other systems like TAPE and firewall to produce more accurate results.

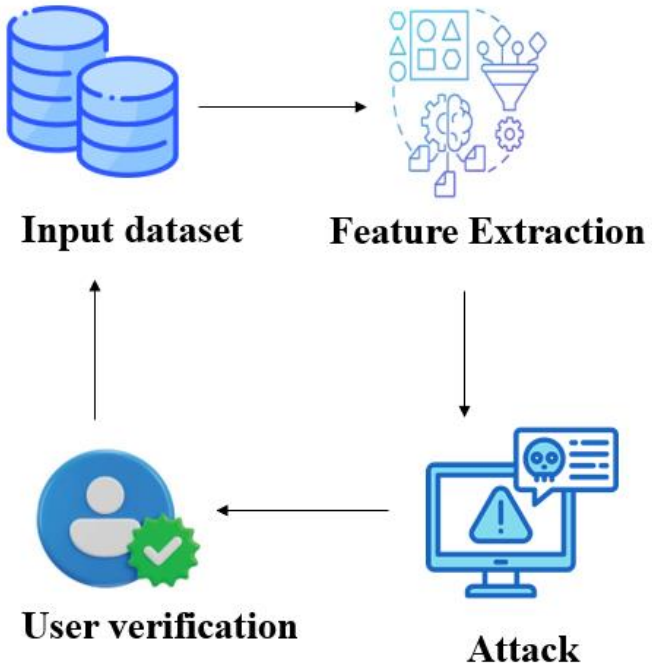


Keywords – Cybersecurity, Honeypots, Honeynet, Deep Learning, Firewall.

5. AN OPTIMIZED DEEP LEARNING BASED INTRUSION DETECTION MODEL FOR NETWORK APPLICATION

D. Lavanya and Kannan Ramakrishnan

Abstract – The deployment of advanced information technologies leads to wide data collection and processing in Internet of Things (IoT) systems. The wide usage of network and improved technologies increases the vulnerabilities and security issues. Thus, an Intrusion Detection System (IDS) was developed to predict and prevent the malicious activities in the network. However, the traditional IDS model failed to detect the malicious events accurately. Hence, a novel hybrid Antlion-based Radial Neural Network was designed to detect the attack data in the network. In this system, the dataset was pre-processed in the hidden layer to eliminate the noise or error data. Further, the important data features are tracked using the Antlion fitness for detection purposes. Finally, the malicious data are by contrasting the retrieved features with the learned features, objects can be recognized. Moreover, a user authentication module was designed to verify the users. The presented model was trained and tested with publically available IDS datasets namely: NSL-KDD and CICIDS. It is noted that the created framework managed to greater accuracy of 98.74%, and 98.96% for NSL-KDD and CICIDS datasets, respectively. Furthermore, the results are compared with the existing techniques for validation purposes.



Keywords – Intrusion detection system, Radial Basis Neural network, Antlion optimization algorithm, User Authentication.