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DOCKER BASED IRIS RECOGNITION USING INTELLIGENCE MODELS

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Abstract- The objective of the project is to analyze, design and develop effective Iris Recognition system.It leverages the power of container based docker technology along with supervised learning models to develop the proposed Iris Recognition.It also focuses on NoSQL and In Memory Databases for the storage to extract the knowledge from huge amount of Iris data.

I. INTRODUCTION

There are a couple of problems we're looking at specifically. The first one is aimed at the fact that a VM is a fairly large-weight compute resource. Your average VM is a copy of an operating system running on top of a hypervisor running on top of physical hardware, which your application is then on top of. That presents some challenges for speed and performance, and some challenges in an agile sort of environment.

So, we're aiming to solve the problem of producing a more lightweight, more agile compute resource. Docker containers launch in a subsecond, and you can then have a hypervisor that sits directly on top of the operating system. So, you can pack a lot of them onto a physical or virtual machine. You get quite a lot of scalability.

For most people, the most important IT asset they own is the code they're developing, and that code lives on a developer's workstation or laptop or in a dev test environment. It's not really valuable to the company until it actually gets in front of the customer. The process by which it gets in front of a customer, that workflow of dev test, staging, and deployment to production, is one of the most [tension-fraught] in IT.

The DevOps movement, for example, emerged from one of the classic stumbling blocks in a lot of organizations. Developers build code and applications and ship them to the operations people, only to discover that the code and applications don't run in production. This is the classic "it works on my machine; it's operations' problem now."

We were aiming to build a lightweight computing technology that helped people put code and applications inside that resource, have them be portable all the way through the dev test, and then be able to be instantiated in production. We made the assumption that what you build and run in dev test looks the same as what you build and run in production.

II. EXISTING MODEL

A. VIRTUALISATION

Virtualization is the nucleus of the cloud computing for providing its services on-demand. Cloud-based distributed systems are predominantly developed using virtualization technology. However, the requirement of significant resources and issues of interoperability and deployment make it less adopt- able in the development of many types of distributed systems. Dockerization or Docker Container-based virtualization has been introduced in the last three years and gaining popularity in the software development community. Docker has recently introduced its distributed system development tool called Swarm, which extends the Docker Container-based system development process on multiple hosts in multiple clouds. Docker Swarm-based containerized distributed system is a brand new approach and needs to be compared with the virtualized distributed system. Therefore, this paper presents the simulation and evaluation of the development of a distributed system using virtualization and dockerization. This simulation is based on Docker Swarm, VirtualBox, Ubuntu, Mac OS X, nginx and redis. To simulate and evaluate the distributed system in the same environment, all Swarm Nodes and Virtual Machines are created using VirtualBox on the same Mac OS X host. For making this evaluation rational, almost similar system resources are allocated to both at the beginning. Subsequently, similar servers nginx and redis are installed on the Swarm Node and Virtual Machine. Finally, based on the experimental simulation results, it evaluates their required resources and operational overheads; thus, their performance and effectiveness for designing distributed systems.

III. PROPOSED SYSTEM

Docker container is an Open platform for developers and system administrators to build and test cloud applications. It can be build once run anywhere. It reduces / eliminates compability on different platform, we can run each app in its isolated container. we can push and pull container images to/from the Docker registry, which is something like a "DockerHub" for Docker container image.

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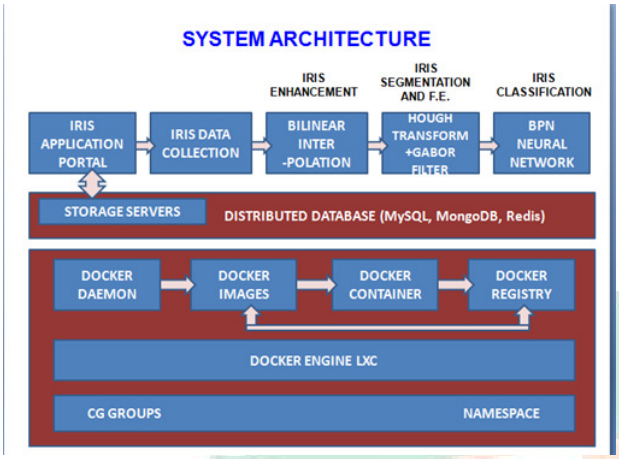


Fig. 3.Architectural diagram

A. DOCKER

Docker is a container virtualization technology. So, it's like a very lightweight virtual machine [VM]. In addition to building containers, we provide what we call a developer workflow, which is really about helping people build containers and applications inside containers and then share those among their teammates.

B. IRIS ENHANCEMENT

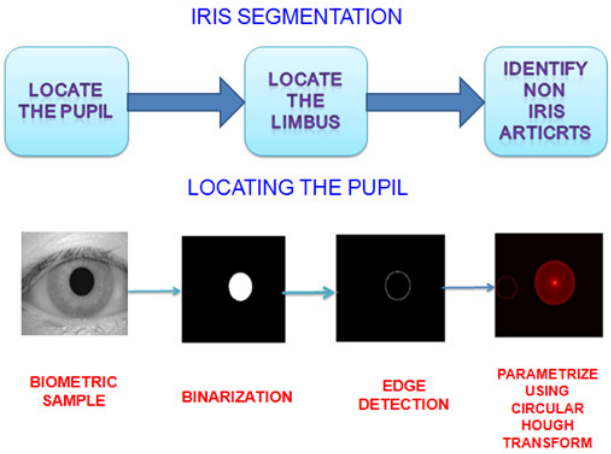
Image quality is very important factor in the performance of an iris recognition system. When the higher quality images are not available the iris recognition can be compromised by using the low quality images such as those acquired in a non-invasive, non-cooperative environment, e.g. iris images obtained at a distance and on the move. These images characterized by abundant degrading factors such as low resolution, lighting and contrast, extensive specular reflections, eyelid occlusion, presence of contact lenses and distracting eyeware, etc. Thus, methods for iris image enhancement play an important part in contributing to the accuracy of iris recognition systems. Up until recently, the methods for iris image enhancement were mostly tested on different iris databases that are represented either by very good quality iris images (such as CASIA-IrisV1, IrisBase, Biosecure iris-DS2) or only by images with few deterioration factors (CASIA-IrisV3, UBIRIS v.1, IrisBase non-ideal images.

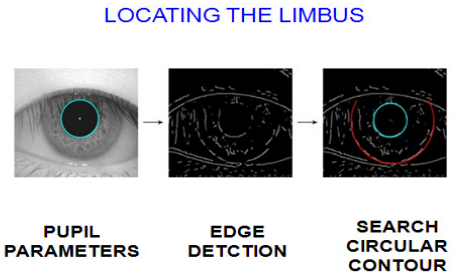
C. Bilinear interpolation

Bilinear interpolation can be used where perfect image transformation with pixel matching is impossible, so that one can calculate and assign appropriate intensity values to pixels. Unlike other interpolation techniques such as nearest-neighbor interpolation and bicubic interpolation bilinear interpolation uses only the 4 nearest pixel values which are located in diagonal directions from a given pixel in order to find the appropriate color intensity values of that pixel.

IV. IRIS SEGMENTATION

The first step in the iris recognition process is to isolate the iris region . The iris region can be approximated by two circles, one for the pupil/iris boundary and one for the iris/sclera boundary. Before detection of these boundaries, the edges of the eye image must be found. From the edge image, the circular Hough transform can be used to detect the centers and radii of the two boundaries.





V. IRIS FEATURE EXTRACTION

Feature extraction a type of dimensionality reduction that efficiently represents interesting parts of an image as a compact feature vector. This approach is useful when image sizes are large and a reduced feature representation is required to quickly complete tasks such as image matching and retrieval. We use GABOR FILTER for feature extraction.

A. Neural Networks (Back Propogation Method) Genetic Algorithm

The multilayer perceptron (MLP) is successfully used in many nonlinear signal processing applications. The backpropagation learning algorithm is very useful for various problems. But the MLP obtains low generalization ability if the number of hidden units is very large in training.

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VI. CONCLUSION

The Docker based iris recognition system using intelligence model provides platform independency and also adaptive learning. It runs faster and takes lesser memory than virtual machine which makes this system unique.

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