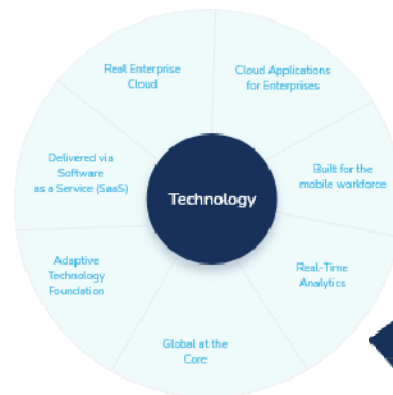**An TipTop Platform White Paper 2021**

TipTop AHALTS

Authentication using Human Identification, Location Tracking, Global Time with sensor (IIOT)

Websites
www.tiptopplanet.com
www.ahalts.com
www.ahaltspay.com
www.hrserp.com

A TipTop Planet White Paper 2021

Tip Top AHALTS

Authentication using Human identification, location Tracking, Global Time with sensors (IIOT).

An API driven Integrated and AI based Mobile Attendance and Human Asset Tracking Application.

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1. Executive Summary

Face recognition technology has seen dramatic performance improvements in recent years, and such systems are now widely used for security and commercial applications. An automated, enterprise-level system for facial recognition, employee identification, and stranger recognition from a real-time monitoring was developed to reduce manual effort, save productive time, and improve on-site security.

The intelligent presence marking from the facial machines is a real solution that is connected with the daily activities of dealing with employees. In order to recognize the faces and assets are recognized with high accuracy. The matching faces are used to indicate the presence of the employees. The designed system manages the attendance lists of employeesand assets in real-time and can be checked by employees from anywhere in the world.

Authentication using Human identification, location Tracking, Global Time with sensors (IIOT).

API driven Integrated and AI based Mobile Attendance and Human Asset Tracking Application.

Attendance Check in/ Check out using Android/ IOS Smart Phone:

Overcome the problems of tracking your employees through our efficiently designed location-based attendance application, real time tracking features to support Geo-fencing and Real Time Geo-tracking which delivers a guaranteed productivity from your workforce.

Maintain records of punch timing along with the location data of respective employees to ensure the effective time utilization and avoid any kind of time thefts. With the implementation of our attendance apps can track employees who are working in the office as well who are field workers, get their punch timings and punch location tracking easily within a single window.

1. Increase Productivity

Increase transparency of working scenarios with real time location tracking which allows managers to give instructions for taking out productive work from employees.

2. Real Time Location/ Live Location Ping and instant messaging

Get the current location and route details of your employees on fields or are on business trips using ping service. On real time basis employee/ supervisor can share or request to share his/ her live location to supervisor/ manager to guide them for better working and improved efficiency.

3. User/ Employee Authenticity validation using Bio Matric and Device Mac Address

Authenticate user by his/ her own Mobile device while marking his/ her attendance along with finger scanning. It will safely guard from proxy attendance marking.

4. Auto Punching in Office

With location-based punching you can virtually fence all your office premises to enable auto punching with your employees' mobile devices along with respective locations.

5. Multiple Platform

We have made our application to support any kind of mobile devices on platforms like Android and iOS so that you can install it on any mobile devices, or tablets of any brands.

Human/Asset Authentication and Validation

- Various devices like sensors, Wi-Fi devices, NFC devices, RFID devices and also actuators.
- Authentication using human identification, location tracking and time recording service.
- Human Assets presence is validated using NFC tags, Geo Fencing (Location Fetching through Mobile Applications) and Biometric Finger Scan.

- Facial recognition with IR sensors for human and access validation with access control gates

3. Why Facial recognition and how business can harness its potential?

A face remains the most common way to identify or authenticate a person. You can find a photo of this in most of the identity papers that we have in our wallets. A lot of information can be provided about a person's face, clothing, and appearance. Today, a person's face has become the epicenter of the most fascinating and promising developing forensic technology - facial recognition.

Since the face is a unique method of identifying people, face recognition has received a lot of attention worldwide and is growing rapidly to ensure safe and reliable security. Because of its high level of security and reliability, it is becoming increasingly important for companies and government organizations.

Face recognition now has more advantages compared to other biometric systems such as palm print and fingerprint, since face recognition does not require human interaction and can be performed without the knowledge of a person that is of great use in identifying human activities in various security applications such as airports, Crime investigation, face tracking, forensics, etc.

A major advantage of a face recognition system is that it is able to identify masses of people since the test does not require the test person's cooperation. Properly designed systems installed at airports, multiplexes, and other public places can identify people from the crowd without passers-by noticing the system.

Role of technology in creating an efficient & robust solution

Face recognition systems are used to identify a person using an image. This technology has been around for decades, but its use has become more noticeable and accessible in recent years as it now enables innovative solutions such as personal photo applications and secondary authentication for mobile devices.

Basically, face recognition takes place in two steps. The first involves the extraction and selection of features and the second the classification of objects. Later developments introduced different technologies into the process. Some of the most notable include the following techniques:

1. Traditional
Some face recognition algorithms identify facial features by extracting landmarks or features from an image of the subject's face. These functions are then used to search for other images with suitable functions.

2. 3-dimensional recognition
Three-dimensional face recognition technology uses 3D sensors to capture information about the shape of a face. This information is then used to identify characteristic features on the surface of a face, such as B. the contour of the eye sockets, nose, and chin.

3. Face recognition by combining different techniques
Combined techniques have an advantage over other systems. It's relatively insensitive to changes in expression, including blinking, frowning, or smiling, and has the ability to compensate for the growth of mustache or beard and the look of glasses. The system is also uniform in terms of race and gender.

4. AHALTS Features

- Multidimensional org chart allows internal and external users to be authenticated whereby Employees, contractual employees, visitors, customers can all be authenticated on same place for different schedules
- Advanced Face recognition Touch less Face id for secured Time and attendance, activity management
- Integrated with HRSERP for workforce Management and cognitive scheduling
- Location tracking for field workers and vehicles
- Time Tracking with Mobile App or IOT terminals integrated with access controls
- Most advanced ID-Tech for security and human identification using most accurate Face recognition and Biometric algorithms
- In Built KYC using government social identification or TipTop KYC services

5. AHALTS Facial Technology

Is a cloud service developed for authenticate user with devices (IOT) and sensors Services are:
- Face Registration
- Face Detection
- Non-Interactive Face Antispoof
- Face Attributes
- Face 1:1
- Face 1: N
- Head – Shoulder Detection
- Mask Detection
- Face Search

Systems with face analysis capabilities enable users to understand where faces are in an image and what attributes these faces have. Once a face is recognized, a facial recognition system determines the position, size, posture, and unique properties of the head. Every face has numerous characteristic landmarks - the different peaks and valleys that make up the facial features. These landmarks are called nodes. Every human face has about 80 knots. Some of the nodes measured by the software include:
- Distance between the eyes
- Width of the nose
- Depth of the eye sockets
- The shape of the cheekbones
- The length of the jawline

The system translates node measurements into a numeric code or set of numbers called a facial print that represents the features on a subject's face that can be compared to the faces in the database. A match is then checked based on facial expression.

Tip Top AHALTS team has developed a centralized face recognition application that can identify employee assets so that employees are automatically present in the office environment without employee intervention. The system consists of two steps, in the first step faces registration and compared with the database for verification.

Face Registration – Registration of face can be process from
- Device – We have dedicated cloud enables Facial Biometric devices which will register user face and link with employee identity in IAM Server.
- Mobile App –Through mobile user can register by self-registration or Admin can register from employee registration form.

## 6. Mobile App – Features and Benefits

Integrated Mobile: One App for all TipTop Applications with Managers, Supervisor and user features all in one

Features:

- Attendance punching (Kiosk attendance/ supervisor mode and employee mode)
- Office Tools (Bulletin/ Meetings Workspace / Tiptop Mail) Employee Self service
- Payroll
- Activity Management Travel and Tracking Reimbursements
- Tracking Reverse face scan for profile search Notifications
- Dashboard and Reports
- Complaint Management / Tickets Monitor

Benefits:
- Low cost of ownership One App for Application
- Works as a Full suite with integrated ID-Tech AHALTS security Tracks Mobile Workforce
- Easy Work from anywhere
- Full suite Features for complete daily working requirement including employee self-service portal
- Empowers workforce to stay connected 24 X 7 from any location Improves productivity and monitoring by 30%
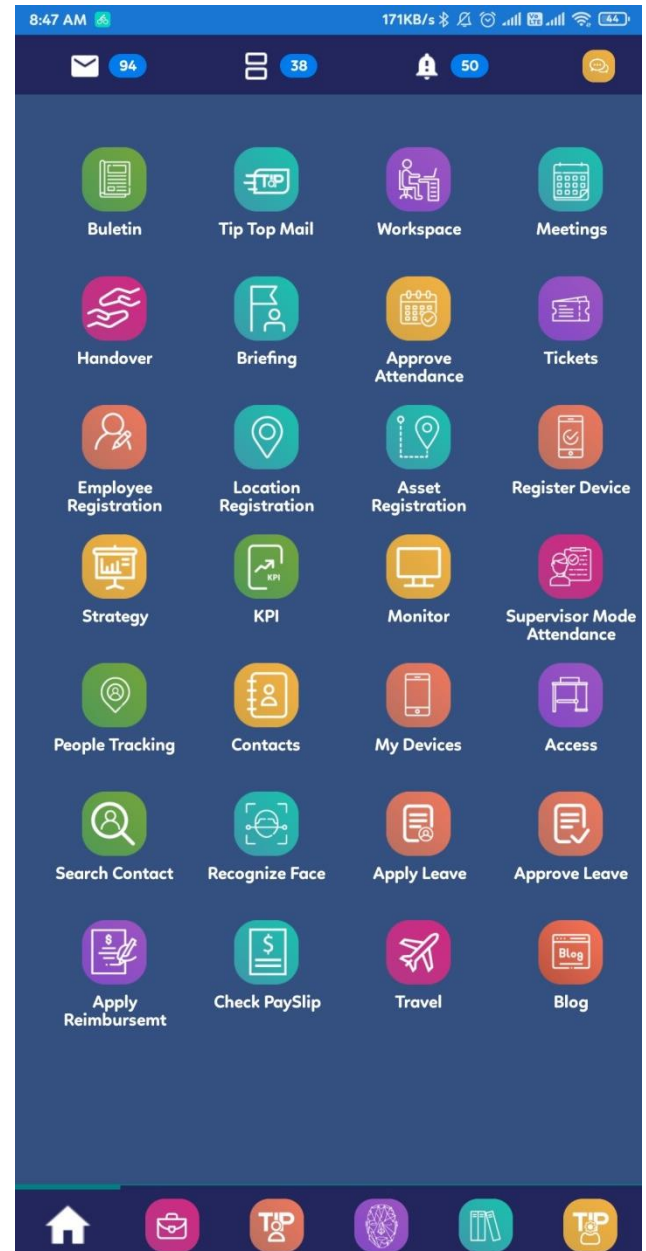
7. Benefits of Technology

AHALTS helps organizations to optimize security and productivity by reducing labor costs, minimizing compliance risks and increase worker's productivity.

- Cognitive schedules for auto shift corrections
- Multiple Usage like visitor entry, contractual labor entry, online work from home monitoring
- API, SDK and APK for custom development Real time location tracking
- Reverse face scan for emergency information like knowing a person's health information
- KYC compliant
- People monitoring and identification Missing people identification
- VIP guest intimation
- Multi device, Mobile, web or IOT Devices Time approvals
- Real-time calculation
- Remote worker tracking with Patrol monitoring feature using NFC (very useful for government schemes like Aangan Badi and Mnrega etc.)
- Security layer for Banks transactions
- Greater accuracy: 3D mapping, deep learning, and other advances make facial recognition more reliable and more difficult to deceive.
- Better security: Research shows that there is a 1: 50,000 chance that a phone with a Touch ID will be unlocked with the wrong fingerprint. With 3D face modeling, the probability drops to almost 1 in 1,000,000.
- Comfortable and smooth: FRT is easy. It can be used passively without the user's knowledge.
- Smarter integration: Face recognition tools are generally easy to integrate with existing security infrastructures and save time and money when developing new software.
- Automation: Thanks to automated and precise security around the clock, security personnel no longer have to visually monitor entry points, carry out security checks, and display security cameras.

8. Summary and Limitations

We intend to streamline the human resources management system using real-time face recognition services. However, our model has some limitations:

Poor image quality limits the effectiveness of facial recognition: if a user moves too quickly, the image quality may be affected.

Small image sizes make facial recognition difficult. Therefore, the user has to step closer to the camera to mark himself.

Different angles of view can affect the reliability of face recognition. Anything less than a frontal view affects the ability of the algorithm to generate a template for the face. The more direct the image (both the registered and the test image) and the higher the resolution, the higher the score of the resulting matches. Of course, no technology is completely risk-free. AHALTS Face recognition is very data-intensive, which can hinder processing and storage. Despite huge advances, recognizing faces from multiple camera angles or with obstacles (such as hats) is still not perfect. There has also been controversy regarding data protection issues, particularly in retail. For this reason, facial recognition should be combined with other multi-factor methods to improve user access, never as the only factor in itself.