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International Teaching Aid Competition 2023

Reconnoitering Innovative Ideas in Postnormal Times

iTAC

2023

iTAC 2023
INTERNATIONAL TEACHING AID COMPETITION
E-PROCEEDINGS

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PREFACE

iTAC or International Teaching Aid Competition 2023 was a venue for academicians, researchers, industries, junior and young inventors to showcase their innovative ideas not only in the teaching and learning sphere but also in other numerous disciplines of study. This competition was organised by the Special Interest Group, Public Interest Centre of Excellence (SIG PICE) UiTM Kedah Branch, Malaysia. Its main aim was to promote the production of innovative ideas among academicians, students and also the public at large.

In accordance with the theme "Reconnoitering Innovative Ideas in Post-normal Times", the development of novel ideas from the perspectives of interdisciplinary innovations is more compelling today, especially in the post-covid 19 times. Post-pandemic initiatives are the most relevant in the current world to adapt to new ways of doing things and all these surely require networking and collaboration. Rising to the occasion, iTAC 2023 has managed to attract more than 267 participations for all categories. The staggering number of submissions has proven the relevance of this competition to the academic world and beyond in urging the culture of innovating ideas.

iTAC 2023 committee would like to thank all creative participants for showcasing their innovative ideas with us. As expected in any competition, there will be those who win and those who lose. Congratulations to all the award recipients (Diamond, Gold, Silver and Bronze) for their winning entries. Those who did not make the cut this year can always improve and join us again later.

It is hoped that iTAC 2023 has been a worthy platform for all participating innovators who have shown ingenious efforts in their products and ideas. This compilation of extended abstracts published as iTAC 2023 E-Proceedings contains insights into what current researchers, both experienced and novice, find important and relevant in the post-normal times.

Best regards,

iTAC 2023 Committee
Special Interest Group, Public Interest Centre of Excellence (SIG PICE)
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FACE RECOGNITION FOR THE HOTELS INDUSTRY

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ABSTRACT

Face recognition is one of the innovations in technology that will make customer's and hotels' life easier. It's because clients who have reserved a room at the hotel no longer need to use a card to access the room; instead, they may use facial recognition. For check-in and other services, clients often deal with the front desk in the hotel lobby. If there are a lot of customers and other issues, such as a system outage, it somewhat slows down the check-in process and makes clients wait for a while. However, face recognition makes things simpler for both consumers and the hotel. This technology can recognize human faces in pictures or videos, and assess if a face appears as the same person. Other than that, one of the best applications for facial recognition in hotels is security. By scanning their faces, it's simple to recognize visitors and provide them entrance to the hotels. For our product's novelty, we put the product in front of each hotel's door, and the guest just uses face recognition to enter the room without using an access card. Face recognition will be detected from online booking through the phone. If their phone cannot do face recognition, the apps will give the password and the guest can enter it into our product and scan their face in front of the door. This product shortened the time for customers to self-check in at the hotel and make it more efficient. Also, this product strengthens the security measures at the hotel and makes it hard for a security breach. This product could be commercialized if a hotel started to use this technology in their services and it proves that

this product changes the quality of service in the hotel.

Keywords: Face recognition, Hotel technology, Technology adoption, Hotel industry

PRODUCT CONCEPT

Face recognition is one of the innovations in technology that will make customers' and hotels' life easier. The reason is because the customer no longer needs to use a card to access their room and they just need to scan their face with this product. This product will be used at a certain level only because it requires a very high cost if it is to be placed in all rooms at the hotel. This technology can recognize human faces in pictures or videos and assess if a face appears as the same person.

PRODUCT ISSUE

The main reason we do this product is because we care about customer safety. It is because other people can open their room just by stealing their access key to their room. So, with face recognition the possibility for other people to open their room without permission is low. Other than that, sometimes the customers are too tired of waiting for the receptionist to give them the key to their room.

NOVELTY

Because of programs like Apple Face ID, facial recognition has become widely used recently. It's also being used in the hospitality industry for everything from quick check-ins at hotels and airports to providing more individualized customer service. Marriott hotels in China are using face recognition for their hotels. In less than a minute, face recognition technology scans their face, recognizes them, and gives them a key card. For our product's novelty, we put the product in front of each suite room's door, and the guest just uses face recognition to enter the room without using an access card. The face recognition will be detected from online booking through phone. If their phone cannot do the face recognition, the apps will give the password and the guest can enter it on our product and scan their face in front of the door.

CREATIVITY

There are four steps in the facial recognition implementation process. Firstly is image acquisition. By using a fixed camera or video system to collect faces, facial recognition technology creates high-quality, detailed photos. Second, is image processing. When

undesirable portions of an image are clipped and turned into black and white before being displayed as grayscale, it plays a crucial role in face detection and recognition. The image must first be present in the machine being detected before it can be normalized. Next is the characteristic location. We can compare the key elements of the face, which are the top ridges of the eye sockets, the region surrounding the cheekbones, the side of the mouth, and the form of the nose. This function enables us to spot behavioral alterations, including hairdos, cosmetics, and eyewear. The last step is template creation and matching. We develop a template from 100 bytes to over 3K by using several processed facial photos as input. With the possibility of 10 to 20 match attempts in a template-matching facial detection and recognition system, each of which might take up to a second.

USEFULNESS

As we mentioned, this product will make customer and hotel life easier because this product will shorten the time for the customers to self-check in at the hotel and make it more efficient. Face recognition also will provide customers with high security because only they can open their hotel rooms with this product. Last but not least this product will strengthen the security measures at the hotel and make it hard for a security breach.

OVERALL ACCEPTABILITY

Face recognition technology is quickly spreading throughout hospitality environments to enhance customer service and employee attendance tracking. It can enhance the client experience by automating some verification or authorization procedures. Also, it can be quite helpful to pinpoint specific individuals, even in huge crowds, strengthening security measures. It is acceptable to apply this product for hotels because it can be used for security and access, customer service, payment authorization, and research and information. We also conducted a survey about our product to some hotels, and they gave us positive feedback about this technology.

COMMERCIAL VALUE

Due to its many application possibilities, facial recognition technology is quickly being used by a wide range of end users. The product line includes smart hospitality service, a facial recognition-based solution. Additionally, the facial recognition technology-based system would aid consumers in having secure and safe hotel stays. It would be utilized for many different things, like checking in, making cashless purchases, using entertainment options, and entering rooms. The market is expanding as a result of the growing use of facial recognition technology in a variety of applications. In order to increase security, border control officials, particularly in airports, are deploying technology to confirm travelers' identities. In order to

identify the desired individual, law enforcement organizations also use face recognition software to scan faces taken on CCTV.

APPLICATION

The product will be installed on the door, functioning as a card access but needs the customer's face to enter. First, it detects and saves customers' faces through mobile phones when booking using the hotel application. Then, the data will be transferred to the device in which room the customer has booked. Upon arriving, customers can go straight to the room that they have booked. To enter the room, customers have to stand facing the device in order for it to detect their faces and unlock the door. If having any difficulties with the device in which it cannot detect customers' faces, there will be a pin code given to access the door. The door will be locked automatically if customers shut the door. From the inside of the room, customers won't need to use any key card, pin code, or face recognition to leave the room.

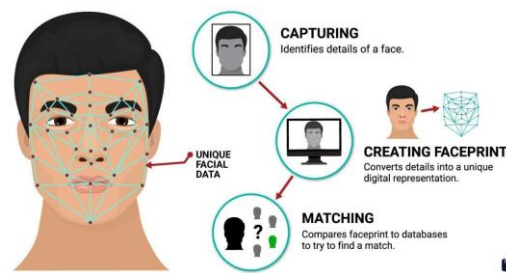


Figure 1.1: This is how the technology works

ESTIMATED COST

Cost is a significant factor in a product's success. We estimate that Face recognition for the hotel industry will sell for as much as RM600 for each unit. Due to the excellent quality of the device used, this RM600 is ideal for sale. We calculated this sum by including the costs of the device and installment costs. RM480 is the cost of the device. We choose the device from HIKVISION because it offers affordable and trusted quality. Another RM100 is for the installation cost of the product on the room door which we pay our employees to do the job.

The profit that we took from each product sold RM600 is RM20. The profit we get is important to our company because it can be used for the future development of a new product or to make an improvement to an existing product.



Figure 1.2: The face recognition device

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