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AUTOMATING E-GOVERNMENT USING ARTIFICIAL INTELLIGENCE

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ABSTRACT: In this Project proposed a framework that utilizes AI technologies to automate and facilitate e-government services. Specifically, werst outline a framework for the management of e-government information resources. Second, we develop a set of deep learning models that aim to automate several e-government services. Third, we propose a smart e-government platform architecture that supports the development and implementation of AI applications of e-government. Our overarching goal is to utilize trustworthy AI techniques in advancing the current state of e-government services in order to minimize processing times, reduce costs, and improve citizens' satisfaction.

INTRODUCTION

Artificial Intelligence (AI) has been around for some decades in several theoretical forms and complicated systems; however, only recent advances in computational powers and big data have enabled AI to achieve outstanding results in an ever-growing number of domains. For example, AI have tremendously advanced the areas of computer vision, medical applications, natural language processing, reinforcement learning, and several other domains. AI can be defined as the ability of a computer to imitate the intelligence of human behavior while improving its own performance. AI is not only robotics, rather an intelligent behavior of an autonomous machine that describes the brain of the machine and not its body; it can drive a car, play a game, and perform diverse sophisticated jobs. AI is a field that falls at the intersections of several other domains, including Machine Learning, Deep Learning, Natural Languages Processing, Context Awareness, and Data Security and Privacy.

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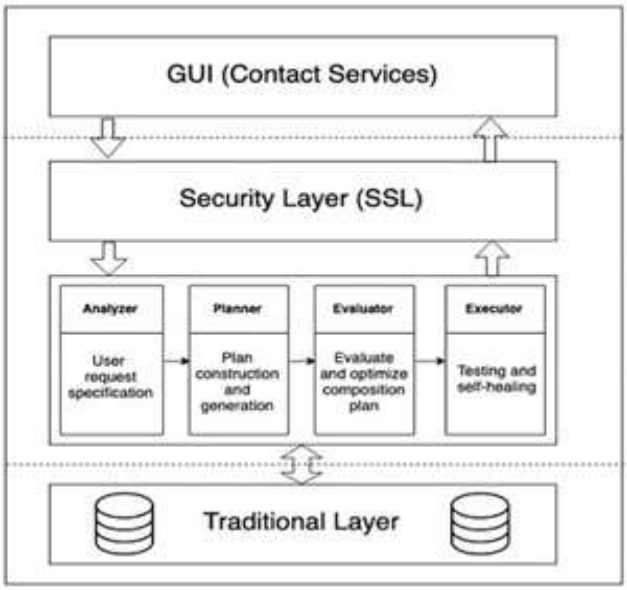

LITERATURESURVEY

X. Zhang[1]provided comprehensive empirical evidence showing that residual networks are easier to optimize, and can gain accuracy from considerably increased depth. And also presented analysis on CIFAR-10 with 100 and 1000 layers. The depth of representations is of central importance for many visual recognition tasks. Solely due to our extremely deep representations,

H. Chen [2] used under sampling to solve the accuracy paradox and developed a sevenlayer deep neural network (DNN), which includes one input layer, four sparse auto encoder layers, one SoftMax layer, and one output layer. This method achieved a sensitivity of 95.13%, a specificity of 93.33%, and an accuracy of 94.23%. The result is better than three state-of-the-art approaches.

S. Venugopalanand **H. Xu[3]** proposed to translate videos directly to sentences using a unified deep neural network with both convolutional and recurrent structure. Described video datasets are scarce, and most existing methods have been applied to toy domains with a small vocabulary of possible words. By transferring knowledge from 1.2M+ images with category labels and 100,000+ images with captions, this method can create sentence descriptions of open-domain videos with large vocabularies.

PROPOSEDSYSTEM

In this project we are describing concept to automate government services with Artificial Intelligence technology such as Deep Learning algorithm called Convolution Neural Networks (CNN). Government can introduce new schemes on internet and peoples can read news and notifications of

such schemes and then peoples can write opinion about such schemes and these opinions can help government in taking better decisions. To detect public opinions about schemes automatically we need to have software like human brains which can easily understand the opinion which peoples are writing is in favor of positive or negative.

To build such automated opinion detection author is suggesting to build CNN model which can work like human brains. This CNN model can be generated for any services and we can make it to work like automated decision making without any human interactions. To suggest this technique author already describing concept to implement multiple models in which one model can detect or recognize human hand written digits and second model can detect sentiment from text sentences which can be given by human about government schemes. In our extension model we added another model which can detect sentiment from person face image. Person face expressions can describe sentiments better than words or sentences. So our extension work can predict sentiments from person face images.

IMPLEMENTATION

- Unlike traditional ML algorithms, Deep Learning, a subfield of ML, has emerged to outcome the limitations of prior ML algorithms. Deep learning can be defined as a mapping function that maps raw input data (e.g., a medical image) to the desired output (e.g., diagnosis) by minimizing a loss function using some optimization approach, such as stochastic gradient descent to the desired output through a large number of layers (known as hidden layers), and thus the name deep learning. The hidden layers are responsible for the actual mapping process, which is a series of simple but nonlinear mathematical operations (i.e., a dot product followed by a nonlinear process). The main advantage of deep learning is that it does not require feature engineering.

- Despite the fact that deep learning has improved the state-of-art results in several domains, it is still evident that e-government applications face several challenges regarding adapting deep learning.

- Recently, many countries have adopted e-government services in various departments and many autonomous applications. While there are several studies conducted for enhancing e-government services, only a few of them address utilizing recent advances in AI and deep learning in the automation of e-government services. Therefore, there is still an urgent need to utilize state-of-the-art AI techniques and algorithms to address e-government challenges

and needs.

- So we used a concept to automate government services with Artificial Intelligence technology such as Deep Learning algorithm called Convolution Neural Networks (CNN)to detect public opinions about government schemes automatically.We need to have software like human brains which can easily understand the opinion which peoples are writing is in favor of positive or negative.

- To build such automated opinion detection author is suggesting to build CNN model which can work like human brains. This CNN model can be generated for any services and we can make it to work like automated decision making without any human interactions. To suggest this technique author already describing concept to implement multiple models in which one model can detect or recognize human hand written digits and second model can detect sentiment from text sentences which can be given by human about government schemes.

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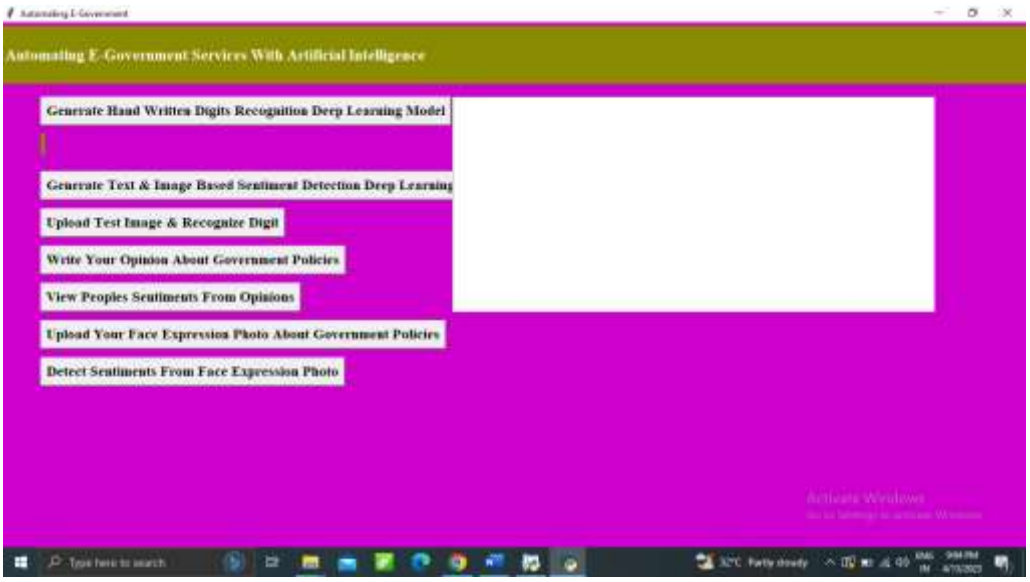
SAMPLESCREENS

Home Page:



In above screen click on ‘Generate Hand Written Digits Recognition Deep Learning Model’ button and ‘Generate Text &Image Based Sentiment Detection Deep Learning’ button.

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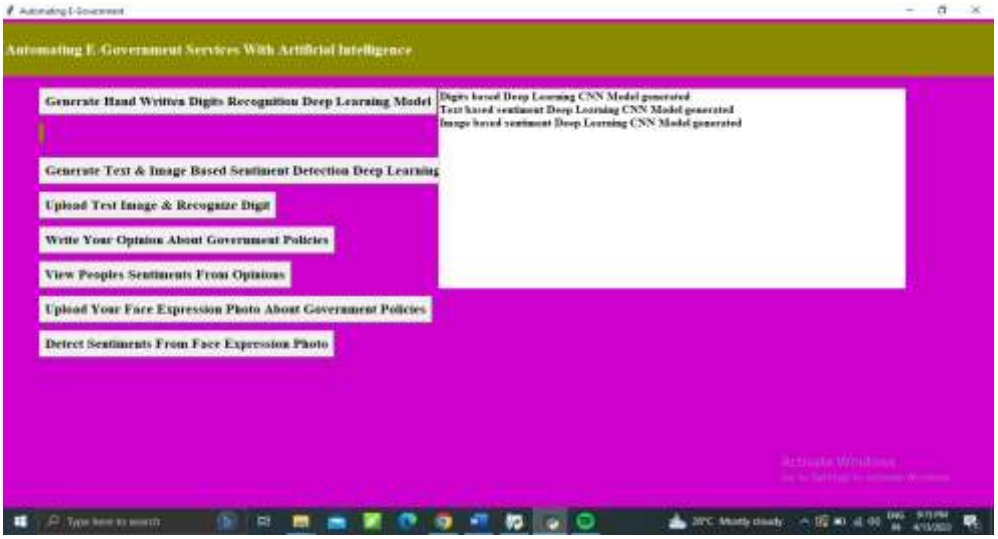
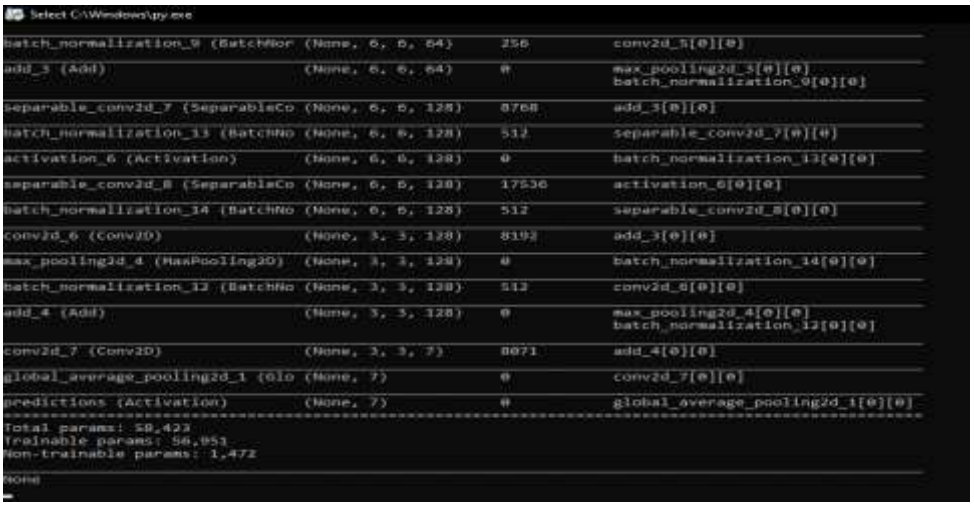


In above screen we can see that the models are generated. See black screen for more details.



Now click on ‘Upload Test Image & Recognize Digit’ button to upload digit images to get name of the digit or click on ‘Write Your Opinion About Government Policies’ button to write some comments on government policy.

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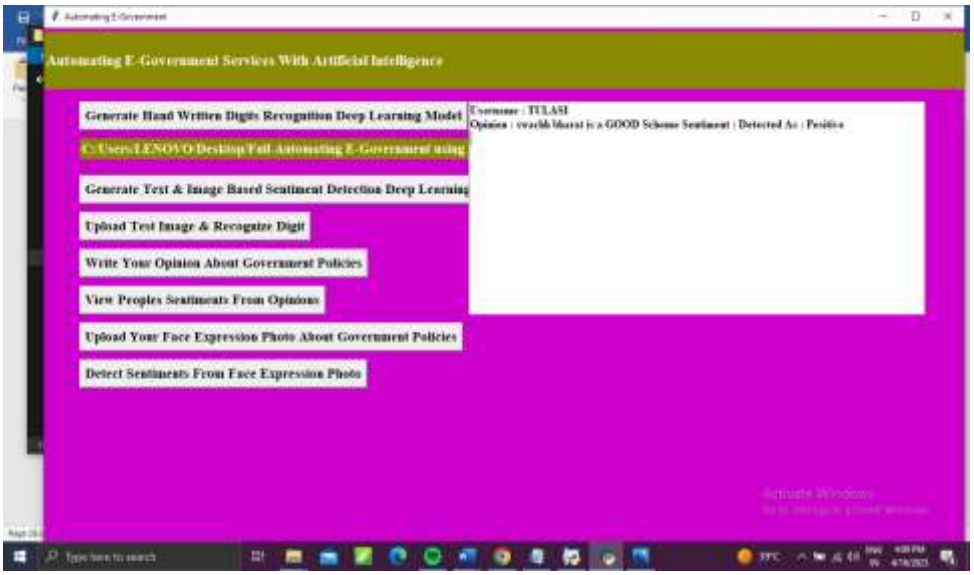
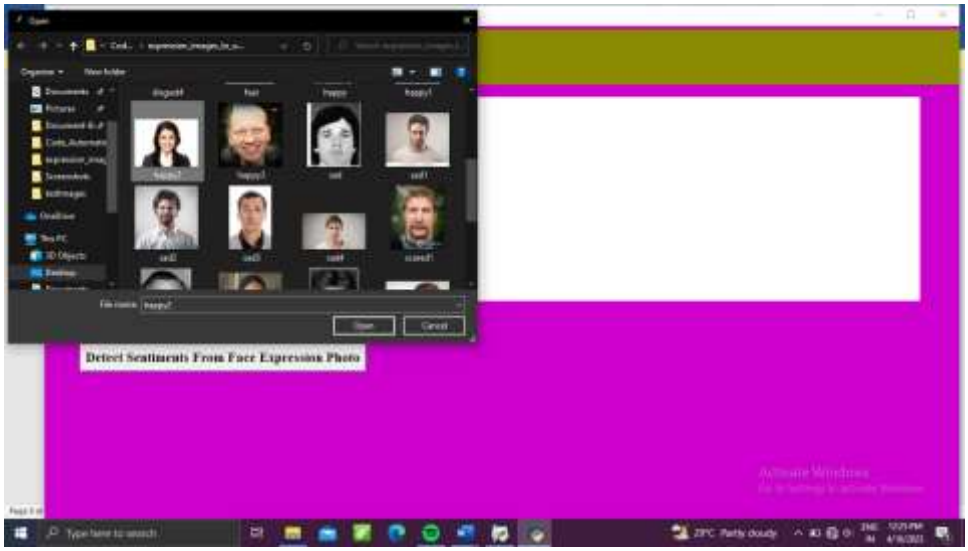
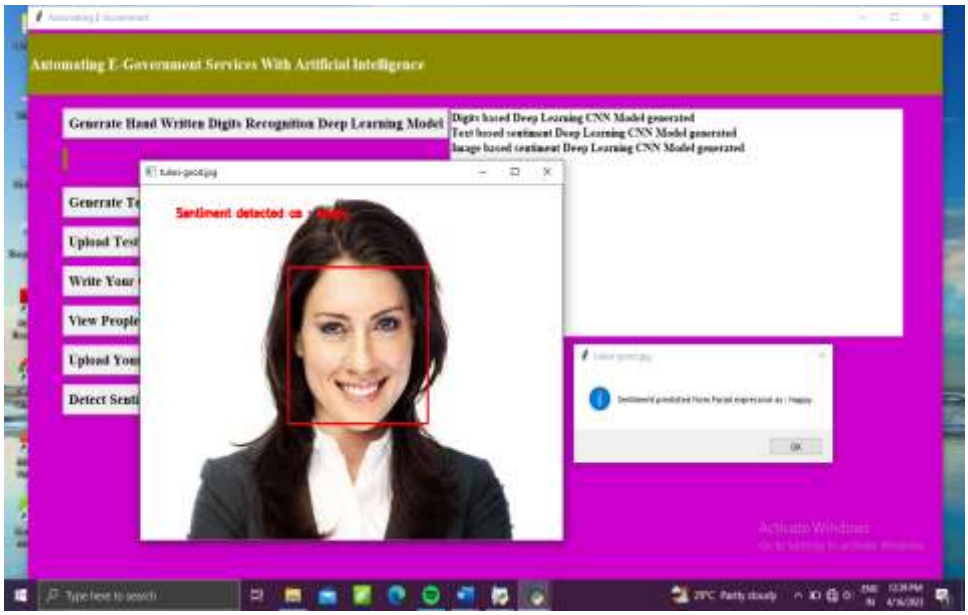


In above screen text area, we can see opinions from all users and in first opinion we got sentiment detected as positive which means user is satisfy with that scheme and for second opinion, we got sentiment as negative which means user not happy. Similarly, user can upload their image with facial expression which describe whether user is happy or angry.



In above screen we are uploading one happy face image and then application ask to write username and referring scheme name. Similarly, any number of users can upload their images. Now click on 'Detect Sentiments from Face Expression Photo' button to get all images and its detected sentiments



In above screen we can see all images with facial expression are identified with their sentiments. In dialog box also we can see sentiment result.

CONCLUSION

In this project, we introduced the definitions of artificial intelligence and e-government, briey discussed the current state of e-government indices around the world, and then proposed our solutions to advance the current state of e-government, considering the Gulf Countries as a case study. We proposed a framework for management of government information resources that help manage the e-government lifecycle end-to-end. Then, we proposed a set of deep learning techniques that can help facilitate and automate several e-government services. After that, we proposed a smart platform for AI development and implementation in e-government.

The overarching goal of this project is to introduce new frameworks and platform to integrate recent advances in AI techniques in the e-government systems and services to improve the overall trust, transparency, and efficiency of e-government.

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