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AUTOMATING E-GOVERNMENT POLICIES HAND WRITTEN DIGITS RECOGNITION AND TEXT & IMAGE BASED SENTIMENT DETECTION USING AI

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ABSTRACT :

In this paper, author describes the concept of predicting insurance policy charges and user opinion sentiment on policies by applying machine learning and artificial intelligence. Machine learning can automatically predict future values by analyzing past historical data, and artificial intelligence will take decision as human brain (as our brain help us in making decision as working hard if marks are less, or taking it easy). Additionally, by analysing male and female BMI index AI and machine learning can predict insurance policies and their charges. This AI and machine learning can also analyze users' opinions or reviews and then it will take decision as whether their opinion is positive, negative, or neutral.

Keywords: Describes,Insurance Policy,Opinion,Sentiment,Human Brain,Positive,Negative.

1. INTRODUCTION :

Artificial Intelligence (AI) has been around for several decades in various theoretical forms and complex systems. However, only recent advances in computational power 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 [1], 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, but also 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 [3], Context Awareness [7], and Data Security and Privacy. Figure 1 illustrates the intersections and relationship of the AI field with related fields. Machine Learning (ML) is the ability of an algorithm to learn from prior data to produce smart behavior and make correct decisions in various situations that it has never faced before. ML algorithms are enabled by training a computational model, which is the process of exposing an algorithm to a large dataset (e.g., citizens' demographics) to predict future behaviors (e.g., employment rates). The process of learning from prior datasets is known as supervised learning. Unlike traditional ML algorithms, Deep Learning, a sub-field of ML, has emerged to overcome 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 (SGD) [9]. Deep learning algorithms, inspired by the neural networks in the human brain, are built with a large number of hierarchical artificial neural networks that map the raw input data (inserted at the input layer) to the desired output (produced at the output layer) through a large number of layers (known as hidden layers), hence the name deep learning. The hidden layers are responsible for the actual mapping process, which involves 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.

2. LITERATURE SURVEY :

1. Seven-layer deep neural network based on a sparse autoencoder for voxel-wise detection of cerebral microbleeds.

In order to detect cerebral microbleed (CMB) voxels within the brain, we used susceptibility-weighted imaging to scan the subjects. Then, we used undersampling to solve the accuracy paradox caused by the imbalanced data between CMB voxels and non-CMB voxels. We developed a seven-layer deep neural network (DNN), which includes one input layer, four

sparse autoencoder layers, one softmax layer, and one output layer. Our simulation showed that 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.

2. Translating videos into natural language using a deep recurrent neural network.

Solving the visual symbol grounding problem has long been a goal of artificial intelligence. The field appears to be advancing closer to this goal with recent breakthroughs in deep learning for natural language grounding in static images. In this paper, we propose 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, our method is able to create sentence descriptions of open-domain videos with large vocabularies. We compare our approach with recent work using language generation metrics, subject, verb, and object prediction accuracy, and human evaluation.

3. Mastering the game of Go with deep neural networks and tree search.

The game of Go has long been viewed as the most challenging of classic games for artificial intelligence owing to its enormous search space and the difficulty of evaluating board positions and moves. Here, we introduce a new approach to computer Go that uses ‘value networks’ to evaluate board positions and ‘policy networks’ to select moves. These deep neural networks are trained by a novel combination of supervised learning from human expert games and reinforcement learning from games of self-play. Without any lookahead search, the neural networks play Go at the level of state-of-the-art Monte Carlo tree search programs that simulate thousands of random games of self-play. We also introduce a new search algorithm that combines Monte Carlo simulation with value and policy networks. Using this search algorithm, our program AlphaGo achieved a 99.8% winning rate against other Go programs and defeated the human European Go champion by 5 games to 0. This is the first time that a computer program has defeated a human professional player in the full-sized game of Go, a feat previously thought to be at least a decade away.

4. Pattern Recognition and Machine Learning

First text on pattern recognition to present the Bayesian viewpoint, which has become increasingly popular in the last five years. It presents approximate inference algorithms that

permit fast approximate answers in situations where exact answers are not feasible. It text to use graphical models to describe probability distributions. There are no other books that apply graphical models to machine learning. First four-color book on pattern recognition. The dramatic growth in practical applications for machine learning over the last ten years has been accompanied by many important developments in the underlying algorithms and techniques. For example, Bayesian methods have grown from a specialist niche to become mainstream, while graphical models have emerged as a general framework for describing and applying probabilistic techniques. The practical applicability of Bayesian methods has been greatly enhanced by the development of a range of approximate inference algorithms, such as variational Bayes and expectation propagation. Meanwhile, new models based on kernels have had a significant impact on both algorithms and applications.

3.EXISTING SYSTEM :

Recently, many countries have adopted e-government services in various departments and autonomous applications . While several studies conducted to enhance 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.In contrast, implementing e-government applications still faces several challenges, including the following:

Trust: Trusting online services depends heavily on a couple of factors, including, citizens' trust in the government itself, the quality of online services, and personal beliefs.For example, there are still a large number of citizens who prefer to handle paper applications rather than web services.

Lack of experts: Implementing high-quality online services requires the establishment of the right team of experts that covers all involved practice areas, from web development to security and privacy.

Inaccessibility: Several third-world countries still face significant issues accessing the internet and its services.

Security: State-of-the-art security measures are required to secure e-government applications and citizens' privacy.

4.PROPOSED STRUCTURE :

In this paper, author describes the concept of automating government services with Artificial Intelligence technology, such as the Deep Learning algorithm called Convolution Neural Networks (CNN). The government can introduce new schemes on the internet, and people can read news and notifications about such schemes. Then, people can write their opinions about these schemes, which can help the government in making better decisions. To automatically detect public opinions about schemes,we need software like human brains which can help understand whetherhe opinion which peoples are writing is in favour of positive or negative.

To build such automated opinion detection, author is suggesting to build CNN model that can work like human brains. This CNN model can be generated for any service, and we can make it work like automated decision-making without any human interactions. To suggest this technique, author already describes the concept of implementing multiple models, in which one model can detect or recognize human handwritten digits, and the second model can detect sentiment from text sentences which can be given by humans about government schemes. In our extension model, we added another model that can detect sentiment from a person's face image. Person face expressions can describe sentiments better than words or sentences. So, our extension can predict sentiments from a person's facial images.

5.SYSTEM ARCHITECTURE :

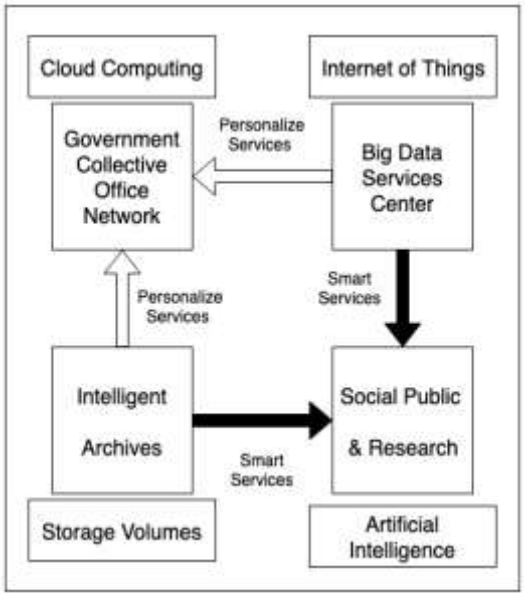

Figure No.1: System Architecture

6. RESULT :

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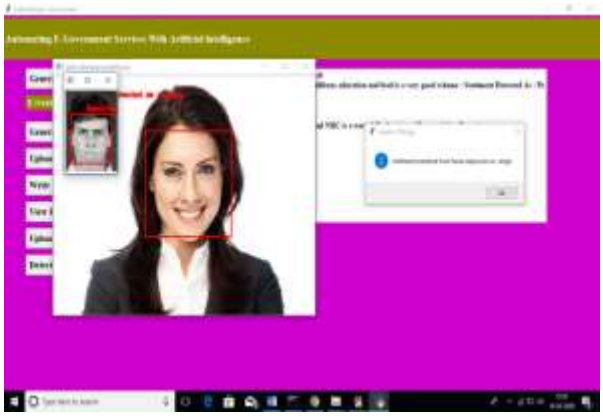
Now click on 'Upload Test Image & Recognize Digit' button to upload digit images and obtain the name of the corresponding digit. All digit images saved inside testImages" folder .



In the above screen, we can see that all images with facial expressions are identified with their corresponding sentiments. In dialog box also we can see sentiment result.

7.CONCLUSION :

With the recent advances in AI and deep learning technologies, more government agencies are starting to use these technologies to improve their systems and services. However, a large set of challenges hinders the adoption of such technologies, including the lack of experts, computational resources, trust, and AI interpretability. In this paper, we introduce the definitions of artificial intelligence and e-government, briefly discuss the current state of e-government indices around the world, and then propose our solutions to advance the current state of e-government, considering the Gulf Countries as a case study. We propose a framework for the management of government information resources that helps manage the e-government lifecycle end-to-end. Then, we propose a set of deep learning techniques that can help facilitate and automate several e-government services. After that, we propose a

smart platform for AI development and implementation in e-government. The overarching goal of this paper is to introduce new frameworks and platforms 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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