ISSN: 2249-7196
IJMRR/Sep. 2024/ Volume 14/Issue 7/193-203
Ms. Aarti Kasturi / International Journal of Management Research & Review

VIRTUAL AND SMART CITY CYBERSECURITY: WHAT ARTIFICIAL INTELLIGENCE COULD MEAN FOR E-GOVERNMENT THE PERSPECTIVE OF AN ASSOCIATE

Ms. Aarti Kasturi [1], G. Ashritha [2] , G. Prathyusha [3] , K. vidya [4], K. Shravani [5]

[1] Assistant Professor, Department of CSE, Malla Reddy Engineering College for Women, Autonomous, Hyderabad

[2],[3],[4],[5]Student, Department of CSE, Malla Reddy Engineering College for Women, Autonomous, Hyderabad

ABSTRACT: *Protecting computer networks against crimes including hacking, viruses, phishing, and more will be an essential job for artificial intelligence (AI), which is a vital component of Industry4.0. Integrating AI into e-Government systems has the potential to improve cyber capabilities and security. Governments at all levels, including local and state ones, and non-state enterprises are subject to this. There is a belief that the present level of study on the problem is context dependent, but it does offer a mixed picture of the interaction between AI, electronic governance, and cyber security. Many different types of stakeholders, each with their own unique set of experiences and viewpoints, have an impact on cyber security, electronic governance (also known as virtual governance), and artificial intelligence (AI). Our research dives into the interplay between cyber security, e-Government, and AI to fill this information vacuum. The mediating function of e-Governance in the link between cyber security and the rise of AI is also studied, as are the ways in which participation from stakeholders modifies this relationship. For PLS-SEM route models, e-governance acted as a moderator of the link between cyber security and AI. Additionally, it was shown that stakeholder participation reduced the link between e-Governance and safety and e-Governance and AI and e-Governance. For AI and e-government to succeed, stakeholder engagement is crucial to creating a safe, open, and dynamic cyberspace where people may utilize e-services. This research proves without a reasonable doubt that smart city governments should take action to improve their cyber security.*

INTRODUCTION:

Nowadays, safeguarding the infrastructure of computers from any dangers is a part of cyber security, which is a growing and crucial field. The purpose of hackers who target computer networks, data, developers, or electronic information is to incite animosity against adversaries

who are not fighting back. We need to come up with new techniques to safeguard ourselves against cyber-attacks since they are always changing. There has reportedly been an uptick in cyber-attacks targeting the industrial sector, leading to massive financial losses and infrastructure damage. Organizations are increasingly becoming targets of cyber-attacks due to the widespread use of internet-based technology for storing sensitive personal and company data. The financial harm it does and the data that it leaks make it a big concern right now. Denial of service assaults, phishing, and malware might impact every member of society. A significant psychological toll is shown by the fact that many individuals report feeling depressed, anxious, and stressed out as a result of cyber-attacks. The potential of AI to improve computer literacy and national security is advantageous to all levels of government, including nation-states, regional governments, and non-governmental organizations. When it comes to reducing the amount of the next step is to submit the paper to the IEEE Access magazine for publication. Since it represents the original work of the author, it is subject to revision before to publication. The doi:10.1109/ACCESS.2023.3293480 is cited as the reference for this study. Licensed under the CC Attribution-Noncommercial-No Derivative 4.0 International License, all rights are reserved. For further information, go to https://creativecommons.org/licenses/by-nc-nd/4.0 and look for VOLUME XX. Cyber-attacks may lead to nine different outcomes. Autonomous computers with cognitive abilities comparable to those of humans are known as artificial intelligence (AI) [11]. Strategy and decision-making rely heavily on expert human knowledge; this includes the expertise of medical experts, who use their years of training and experience to make diagnoses. Artificial intelligence has both positive and negative effects for cyber security, according to Zaria et al.'s research. One negative aspect is that it facilitates easier cyber-attacks, which might lead to more rapid and catastrophic strikes. By bolstering security measures and advancing cyberspace security, artificial intelligence (AI) offers tremendous promise for future advancements in cyber security. Aside from that, AI has improved security professionals' ability to identify cyber threats, and machine learning programs for malware categorization and detection of network invasions have progressed as well. At long last, cutting-edge Thanks to AI, smart city defenses are now far more robust and resistant to intruders and other major security risks. The inventive solutions offered by a smart city to a variety of problems can be valuable to local officials. When it comes to e-government, nevertheless, ICT is crucial. Additional risks and challenges are introduced when a city's infrastructure is

connected to technological devices for communication and information. Many people use unsecured Wi-Fi connections to access online services like email and banking, making cybercrimes like hacking, DoS attacks, and cracking all too frequent. Cyber security measures, such securing eGovernment services via technology, are a crucial way to classify safe cities worldwide. Among these frameworks, the 'inclusive intelligent city' has garnered a lot of interest for its focus on social and psychological capital and city-wide programs to engage parties in the digital sphere and to engage inhabitants in the enhancement of services. Providing residents with services and facilities that are specific to their requirements is the primary objective. Eservices and technology research done recently indicate that smart city projects focused on citizens would foster the growth of robust internet-dependent social ecologies. As a result, online deals could greatly affect stakeholder participation. Those who depend on online government services are particularly guilty of ignoring the significance of cyber security. The rationale for this is because prior research has shown that AI impacts issues such as smart city security, intelligent transportation, government services, handling energy, and climate change.

RELATED WORK:

Applying RNNs for Picture Recognition

it takes more effort and time to train deeper neural networks. We provide an additional learning framework that surpasses prior methods in order to streamline training on far greater networks. We rethink the layers as if they were learning residual functions, with the inputs to the layers acting as references, rather than learning functions without references. Based on our extensive empirical data, it is possible to optimize these residual networks to attain much higher accuracy. We assess residual networks using the Image Net set of data that have up to 152 layers, which is roughly eight times more than VGG nets [40] but nonetheless needs less complexity. The accuracy of these residual nets in a combination setting with the Image Net test data set is 3.57%. This resulted in the best classification run at the ILSVRC 2015 conference. There is more information on CIFAR-10 with 1,000 and 100 layers here as well. Several visual identification tasks rely on depth of representation. On the COCO object identification dataset, we achieve an impressive 28% relative improvement, regardless of our very deep representations. We built our ILSVRC and COCO 2015 entries1 using a stacking

strategy that is based on deep residual nets. We also had success in detecting and segmenting COCO, as well as in localizing and detecting using Image Net.

Machine learning enables automatic translation of videos into natural language. A common objective of AI research has been the development of mechanisms for the physical representation of abstract ideas. New developments in picture-based neural networks for natural language processing give us optimism that we are getting closer to this objective. Our study proposes an advanced neural network approach that employs convolutional & recurrent layers to directly convert films to text. Most of the current algorithms have only been tested on toy domains with a limited vocabulary, and comprehensive video datasets are hard to come by. Utilizing data from over 1.2 million tagged pictures and over 100,000 captioned shots, our system can describe public-domain films utilizing large word sets in sentence form. In order to evaluate our method, we compare it to newer studies that employ kpis for language generation, prediction accuracy for subjects, verbs, and objects, and human reviewers.

Guidance with deep learning networks and tree search

Go is often regarded as the most difficult traditional game for any AI to manage, because to its expansive search region and the intricacy of assessing board situations and plays. "Policy networks" examine the present board situation and "value networks" decide the next moves in the new computer Go strategy. Combining controlled learning with reinforced learning—derived from human expert gaming and self-play games—is this unique way to teach deep artificial neural networks. Without using look-ahead search, neural networks may perform as well as these programmed opponents in Go by simulating numerous self-playing randomized games using modern Monte Carlo tree searching techniques. Additionally, we provide a novel search strategy that integrates value and networks of policies with Monte Carlo analysis. Using this search approach, our programmed Go bot Alpha Go won the European Go championship by a score of 5 games to 0 and consistently outperformed other Go bots with a victory percentage of 99.8 percent. The long wait is over; a computer program has finally won a full-size Go match against a human specialist.

A Massive Machine Learning Approach with Uncertain Gradient Descent

Over the last decade, data volumes have grown to outpace processing rates. In this case, the main constraint for statistics machine learning approaches is computation time, not sample

size. When looking at learning challenges on a large and small scale, the costs and rewards are quite different. It is computationally challenging to use the optimization strategy when dealing with large-scale problems. On large-scale tasks, unexpected optimization methods like stochastic gradient descent shine. After only one iteration through the training set, two specific stochastic gradient methods—averaged stochastic gradient and second-order stochastic gradient—achieve asymptotic efficiency.

A Look at Smart Government using Artificial Intelligence and the IoT

A system where commonplace items equipped with computational capability, software, sensors, as well as actuators can communicate with one another and work together is called the "Internet of Things" (IoT). Using AI principles, governments may create apps and collect data to help make sense out of the massive volumes of user, sensor, and network data. Thus, AI and the World Wide Web of Things (IoT) may pave the way for new opportunities in many fields, including energy, transportation, medical care, schooling, and public safety, whereby individuals, companies, and governments may benefit. For the purpose of transforming smart governments, this guest editorial presents a thorough research framework that integrates AI and IoT components. The special issue focuses on the Internet of Things (IoT) and its potential applications in smart government. In the editorial, the difficulty is in getting the government to embrace and make use of these technology. Following the editorial are concise descriptions of the six articles comprising this special edition. Lastly, this special issue identifies knowledge gaps in the field and expands upon the suggested framework to provide a roadmap for further study of smart governance's use of AI and the Internet of Things. There are four main objectives listed on the agenda:(1) performing domain-specific studies; (2) expanding the scope of research beyond adoption assessments to include evaluations of these technologies in action; (3) pinpointing concrete obstacles and, by extension, opportunities for success; and (4) strengthening the current body of research methods and theoretical underpinnings.

METHODOLOGY:

The foundation of this project is this model:

1) create an Image Recognition Model using a neural network based on convolution (CNN): In order to estimate the name of a digit given an image of it, we are developing a convolutional neural network (CNN)-based handwriting model. There are two types of

pictures needed to construct a neural network that uses convolution (CNN) model: train photographs, which include every conceivable character a person might write, and verification shots, which show how well the train model is improving the veracity of its predictions. During the training process, Cnn will use all of the photos to construct the model. We will begin by extracting features from train photos so that we can construct a model. We will apply the train design to the test picture after feature extraction in order to classify it during testing.

2) Here we will construct a sentiment recognition deep learning model that uses both text and images. In order to build a text-based sentiment model, we shall use every conceivable positive and negative phrase. In order to build an image-based sentiment model, we will be employing a wide variety of face expression photographs. Whether it's text or images, the subway model can deduce the intended tone.

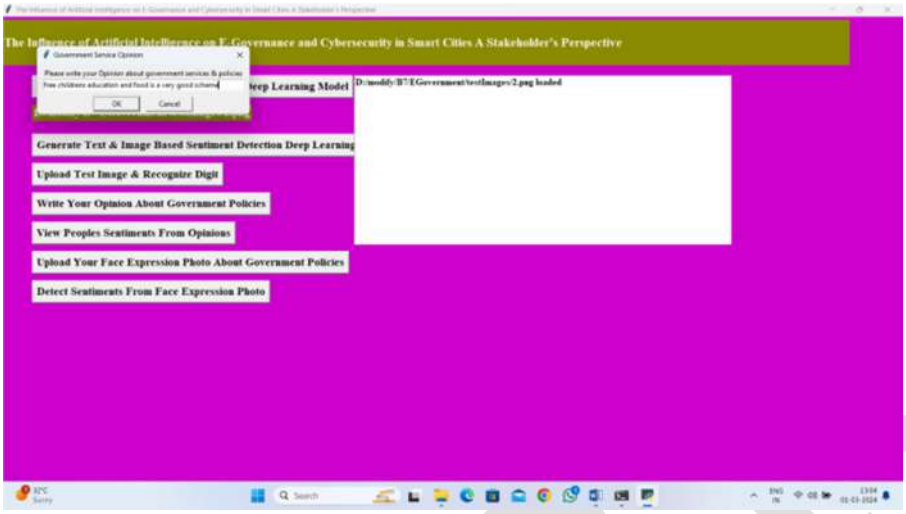
3) Upload a test image and use the recognize digital function: this section lets us upload pictures of text and then use a trained model to detect digital characters.
4) In this unit, you will learn how to use text and images to train a model using deep learning with sentiment identification. Including every conceivable positive and negative phrase is the aim of building a text-based sentiment model. In order to construct an image-based emotion model, a variety of face photographs will be used. Using the train model, the sentiment of any input type—visual or textual—can be predicted.

5) To give you a sense of how others feel and a certain subject, this module's "Look at How People Feel like Things" function combines user comments with the emotions detected by a CNN model.

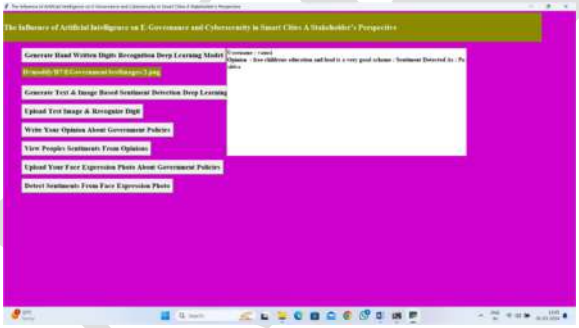
6) Submit an Image Demonstrating Your Emotion By sharing a photo of oneself with different expressions, users may share their thoughts about the proposed system in this part.

7) See Pictures of Face Expressions This module shows user-submitted photos of face expressions with the detected emotion.

RESULT AND DISCUSSION

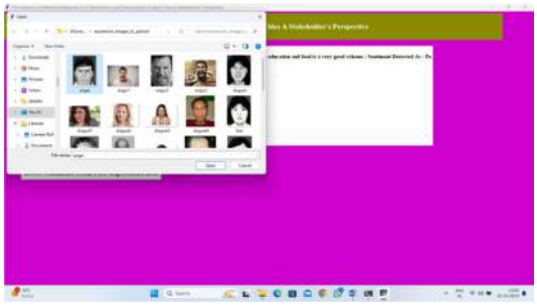


The tool helped me figure out whether my comment on a strategy was positive or bad, as you can see in the screenshot. Select "View Peoples Sentiments and Opinions" to see how each

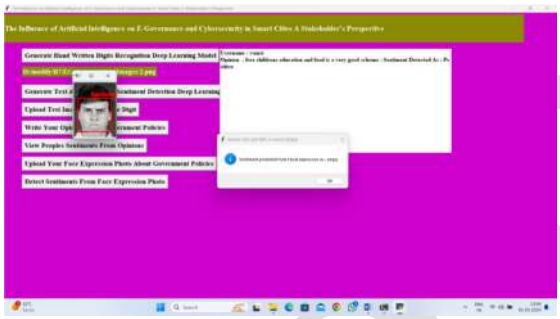


person felt.

The text area above the screen displays all the other users' opinions. The user is happy with the scheme because the initial opinion has a pleasant emotion noticed. However, the second opinion is marked as negative, indicating that the person is dissatisfied. Additionally, users have the option to upload a selfie with a gesture that represents their current emotional state, whether it happy or angry.



As seen in the page before it, the application requests my login information and the moniker of the referral system once I upload an angry face photo. Plus, a ton of people can upload images if they want whole. Last but not least, find all the pictures and the feelings they convey by clicking the "Detect Feelings from Facial Expression Photo" button.



The relevant emotion in each screen grab is labeled for each photo that features a facial expression. In the conversation box, you can also see the effect of the feeling. You may use a variety of comments or images to determine their emotional condition, and the same is true for face shots.

CONCLUSION:

More and more government agencies are using AI as well as deep learning initiatives to enhance their services and systems, driven by the latest innovations in these fields. A shortage of qualified workers, insufficient computing power, mistrust, and unpredictability are some of the obstacles to AI's widespread use.

Using the countries of the Gulf as an example, the article starts by defining AI and e-government. It then moves on to analyze the present status of global a digital government indices and finishes with proposals to improve these indices. We helped with the whole e-government lifecycle by creating a framework for managing government information resources. It was only natural for us to provide a suite of algorithms for deep learning to streamline and automate various online public services. Subsequently, we introduced an intelligent platform for e-government AI development and implementation.

To improve the openness, dependability, and overall effectiveness of e-government systems and services, this article aims to provide new platforms and frameworks for integrating AI approaches.

REFERENCES:

[1] K. He, X. Zhang, S. Ren, and J. Sun, ``Deep residual learning for image recognition," in Proc. IEEE Conf. Compute. Vis. Pattern Recognit.,Jun. 2016, pp. 770_778.

[2] Y.-D. Zhang, Y. Zhang, X.-X. Hou, H. Chen, and S.-H. Wang, ``Sevenlayerdeep neural network based on sparse autoencoder for voxelwisedetection of cerebral microbleed," Multimedia Tools Appl., vol. 77, no. 9,pp. 10521_10538, May 2018.

[3] S. Venugopalan, H. Xu, J. Donahue, M. Rohrbach, R. Mooney, andK. Saenko, ``Translating videos to natural language using deep recurrentneural networks," 2014, arXiv:1412.4729. [Online]. Available:https://arxiv.org/abs/1412.4729

[4] D. Silver, A. Huang, C. J. Maddison, A. Guez, L. Sifre, G. van denDriessche, J. Schrittwieser, I. Antonoglou, V. Panneershelvam, M. Lanctot,S. Dieleman, D. Grewe, J. Nham, N. Kalchbrenner, I. Sutskever,T. Lillicrap, M. Leach, K. Kavukcuoglu, T. Graepel, andD. Hassabis, ``Mastering the game of Go with deep neuralnetworks and tree search," Nature, vol. 529, no. 7587, pp. 484_489, 2016.

[5] C. Bishop, Pattern Recognition and Machine Learning. New York, NY, USA: Springer, 2006.

[6] Y. LeCun, Y. Bengio, and G. Hinton, ``Deep learning," Nature, vol. 521, no. 7553, pp. 436_444, 2015.

[7] G. D. Abowd, A. K. Dey, P. J. Brown, N. Davies, M. Smith, and P. Steggles,``Towards a better understanding of context and context-awareness," inProc. Int. Symp. Handheld Ubiquitous Comput. Berlin, Germany: Springer, 1999, pp. 304_307.

[8] C. Dwork, ``Differential privacy," in Encyclopedia of Cryptography andSecurity, H. C. A. van Tilborg and S. Jajodia, Eds. Boston, MA, USA:Springer, 2011.

[9] L. Bottou, ``Large-scale machine learning with stochastic gradientdescent," in Proc. COMPSTAT, 2010, pp. 177_186.

[10] A. Kankanhalli, Y. Charalabidis, and S. Mellouli, ``IoT and AI for smartgovernment: A research agenda," Government Inf. Quart., vol. 36, no. 2, pp. 304_309, 2019.

[11] J. B. Lee and G. A. Porumbescu, ``Engendering inclusive e-governmentuse through citizen IT training programs," Government Inf. Quart., vol. 36, no. 1, pp. 69_76, 2019.

[12] R. Santa, J. B. MacDonald, and M. Ferrer, ``the role of trust ine-Government effectiveness, operational effectiveness and user satisfaction: Lessons from Saudi Arabia in e-G2B," Government Inf. Quart., vol. 36, no. 1, pp. 39_50, 2019.

[13] J. D. Twizeyimana and A. Andersson, ``the public value ofE-Government_A literature review," Government Inf. Quart., vol. 36, no. 2, pp. 167_178, 2019.146828 VOLUME 7, 2019O. S. Al-Mushayt: Automating E-Government Services with AI

[14] M. Güler, E. Mukul, and G. Büyüközkan, ``Analysis of e-governmentstrategies with hesitant fuzzy linguistic multi-criteria decision makingtechniques," in Proc. Int. Conf. Intell. Fuzzy Syst. Cham, Switzerland: Springer, 2019, pp. 1068_1075.

[15] P. G. Nixon, V. N. Koutrakou, and R. Rawal, eds. Understanding E-Government in Europe: Issues and Challenges. Evanston, IL, USA: Routledge, 2010.