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A NOVEL STUDY FOR THE USE OF E-LEARNING TOOLS IN TEACHING AND LEARNING

Dedar Ahmed Saber KAFROOSHE

Master's Thesis

Supervisor

Asst. Prof. Dr. Abdullahi Abdu IBRAHIM

Istanbul, 2022

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The thesis titled A NOVEL STUDY FOR THE USE OF E-LEARNING TOOLS IN TEACHING AND LEARNING prepared by DEDAR AHMED SABER KAFROOSHE and submitted on 9/ 08/ 2022 has been **accepted unanimously** for the degree of Master of Science in Electrical and Computer Engineering.

_____

Asst. Prof. Dr. Abdullahi Abdu IBRAHIM

Supervisor

Thesis Defense Jury Members:

Asst. Prof. Dr. Abdullahi Abdu IBRAHIM	Faculty Of Engineering and Architecture, Altinbas University	_____
Prof. Dr. Osman Nuri UCAN	Faculty Of Engineering and Architecture, Altinbas University	_____
Asst. Prof. Dr. Tareq Abed MOHAMMED	Faculty of Computer Science and information Technology, Imam Jaafar Al-sadiq University	_____

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Dedar Ahmed Saber KAFROOSHE

Signature

DEDICATION

I devote and pledge this research work to my supervisor who is salient for guiding me through whole research work as well as my family for always assisting me in my hard time.

PREFACE

First and foremost, I would like to thank my supervisor Asst. Prof. Dr. Abdullahi Abdu IBRAHIM for guiding and helping me along the way in writing this dissertation. Discussing my progress, problems, and ideas with my supervisor Asst. Prof. Dr. Abdullahi Abdu IBRAHIM a couple of times every week helped me tremendously in understanding the logic behind the research. It made me better realize the technical need for this research work.

ABSTRACT

A NOVEL STUDY FOR THE USE OF E-LEARNING TOOLS IN TEACHING AND LEARNING

KAFROOSHE, Dedar

M.Sc., Electrical and Computer Engineering, Altınbaş University,

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In this master's Dissertation, the research is concentrated on the development of a smart system for the modernization of electronic learning in smart artificial intelligence-based repositories. In literature, many existing modernization techniques and models have been discussed and presented with their detailed comparison as modernization rate of learning data growth has increased. Many western countries have already upgraded their paper-based systems to the smart system for modernization of electronic learning including Turkey. In methodology, we used python language for the implementation of smart system application with Artificial Intelligence (AI) framework to modernize archived paper-based electronic learning, it also provides a roadmap for the new digital ecosystem which is trained using the deep learning-based Support Vector Machine (SVM). The SVM model offers a framework that can be used to identify roles and responsibilities within a bounded system. Major archives (i.e. open access, closed, restricted, proprietary) are developing specific guidance for preserving digital artifacts and electronic learning in AI. Electronic learning accession, normalization and transformation have also been performed on the electronic learning during the process of modernization to clean the electronic learning and format conversion. In results, we achieved good modernization of most of the electronic learning from 2015 to 2022, the goal is to modernize which most of the electronic learning it belongs to digital format. The distribution of electronic learning modernization for major archives in term of paper based and digitally modernized electronic learning from year 2015 to 2022. The modernization of electronic

learning was recorded very low in 2015 as much of the record archival were paper based in all major repositories of the universities. However, year-by-year the smart system tends modernize the electronic learning in digital format from old paper-based format and till 2022 large amount of electronic learning are being converted to the digital format with a whopping accuracy of 98.68% for all the electronic learning where the system was trained on 80% of data and tested on rest of the 20% of data. To have such smart system can be very helpful for preserving the electronic learning of the universities, and useful for understanding how electronic learning are being modernized and their functionality.

Keywords: Smart System, Modernization, Electronic Learning, SVM, E-learning.

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LIST OF ABBREVIATIONS

ISO : International Standards Organization

SIP : Sustainable Information Packages

IOS : International Organization For Standardization

SVM : Support Vector Machine

1. INTRODUCTION

In this thesis, robust smart system and modernization is performed which is an important part of AI-based e-learning modernization for electronic learning modernization. It is worth to say that the electronic learning are vital forms for human being to communicate and carried out many important tasks daily as mentioned in [1]. Record and other universities parts tracking from electronic learning has revolutionized not only the scientific world but for entertainment like gaming industry and animation creation. It also took its place in traditional hard work on factory automation, virtual reality, rehabilitation purposes & disability support, performance measurement and many more as mentioned in [2]. Now, there are approaches where user can have unique hardware attached to its universities which can have good analysis of the joints and geometry of some university's parts. But it is neither natural nor comfortable. In addition, it is relatively expensive to wear specific hardware designed for certain tasks. Therefore, vision-based applications are preferred over those approaches for simplicity, cost effectiveness and natural interface experience as mentioned in [3].

In this research work, the main motive is to develop a smart system for the universities for the purpose of preserving the existing paper-based electronic learning to the electronic learning. Specialists have perceived the dangers related with supporting a computerized world for a long time as referenced in [4]. The objective of this study is to observe ways that computerized modernization action can be imparted to analysts to work on the permanency of their examination information just as academic care records. The examination zeroed in on exercises in emergency clinics climate that outcome in the production of Sustainable Information Packages (SIP) for three committed exploration advanced libraries for example power, money, science, and innovation for change as the methodology being continued in [5]. Paper-based data bundles are the contribution to the man-made consciousness-based model. The OAIS is an International Standards Organization (ISO) standard that comprises the structure for the new computerized climate will standardize and change the paper-based information to the academic services records.

Today, interceded correspondences and information have joined onto advanced configurations that have been embraced by pretty much every public in the world as referenced in [6]. Albeit the ramifications of the advanced change have been examined according to numerous viewpoints, its effect may not be completely perceived for a long time into the future. We proposed another computerized model more than four years of emergency clinics academic services records from

2015 to 2019, the speeding up pace of wellbeing information development has expanded both the quantity of uncommon open doors for revelation and the danger of inadvertently eliminating precious data sources from the document of aggregate human information with a keystroke as clarified the cycle in [7]. While the innovation to store information (equipment and programming) has improved at an expanding speed, individual and hierarchical practices have been a lot slower to adjust to the new climate as referenced in [8]. Information stockpiling has become more straightforward as the cost of capacity gadgets has dove while information modernization has become more diligently in light of the errand's greatness and inconspicuous, unique nature.

People needs to use mouse, keypads, and remotes to control and manipulate machines. This interface between devices and humans can certainly be improved in coming years. Several research have been going on to modify existing tools and components which com- bine human and machine interface as mentioned in [9]. It can be thought of by giving commands to a computer or robot with speech and/or some forms. This is the way we humans conduct communication among ourselves and we can extend this way of communications to machines as well as mentioned in [10]. This task is the small attempt in that direction. We would like it to understand human actions and commands with forms.

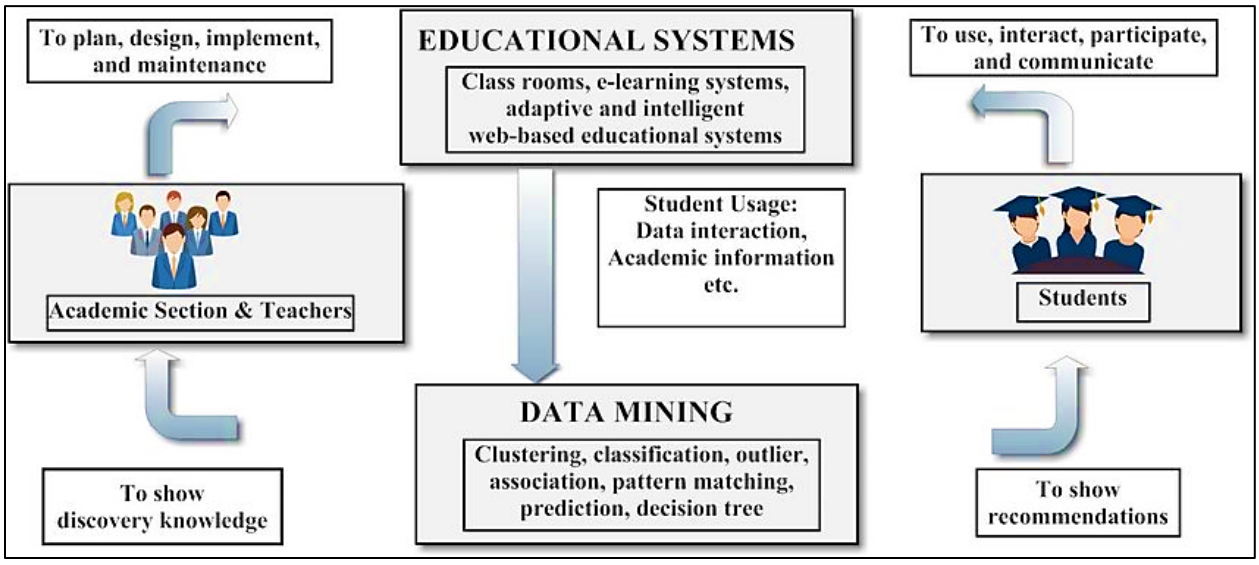

Figure 1.1. The E-Learning stack being used via data mining in academic and educational system [10].

1.1 PROBLEM STATEMENT

There are many related issues of record form modernization. The most widely recognized ones are:

i. E-learning Record Localization: Means to decide the picture position of each single location of record.
ii. E-learning Record Identification: Plans to recognize the nearness and area of highlights, for example, lines, paragraphs, figures, sections, and forms.
iii. E-learning Record Recognizable Proof: Thinks about an info picture against a database and reports a match, assuming any.
iv. E-learning Record Verification Issue: Checks the case of the normalization of record in an information picture.
v. E-learning Record Gauge Issue: Gauge the area and conceivable direction of a record in a picture grouping.
vi. E-learning Record Form Articulation Acknowledgment: Concerns recognizing the full of states (To check if the lines on electronic learning changes over time in different electronic learning) of different universities.

Obviously, smart system is the initial phase in any mechanized framework which takes care of the above issues.

1.2 REVIEW OF ANALOGUES

Smart system and modernization for movement of electronic learning using different machine learning techniques as it is most important task as mentioned in [11]. It can also be considered as in terms of human mimicking in this huge task for making the robot suitable for industry work. The idea is that, the robot should observe human record movements and be able to understand at some point what is going on around its surrounding as mentioned in [12]. That's why accurate and robust real time record movement detection is priority task for this project which can be the first step forward to proceed. Machine learning will eventually work side by side with humans in industry area where it has to understand record form and be able to repeat at some point of time as mentioned in [13]. It must have a very good insight about where humans' electronic learning is with respect to its world coordinates and also it must be able to detect an object for being operated upon. In this task, we are limiting our approach to human electronic learning tracking without any electronic learning in record as mentioned in [14]. It would be simpler approach where record movements are being observed by machine learning and with form or trajectory detection algorithm developed in the later part of this thesis would help to recognize record to understand

that movement. E-learning record tracking algorithm locates records on form by form basis and continuously do so as they move in 3D space as mentioned in [16]. Most tracking algorithms consider object's shape size and color in to account. But once tracking is missed or lost, algorithms fails to find electronic learning and again needs to reinitialize as mentioned in [17]. Learning mask is an important feature for smart system which will be the indicator of electronic learning and face in the scene. Without clear learning mask, depth is not helpful to track electronic learning in this case. Although false learning segmentation vs tracking efficiency needs to be balanced perfectly; by putting strict thresholds would limit false detection but at the same time will have less information to process as mentioned in [18]. Hence efficiency of tracking algorithm will suffer. On the other record, if we keep thresholds too big then the noise and false learning indicator will increase error in detection.

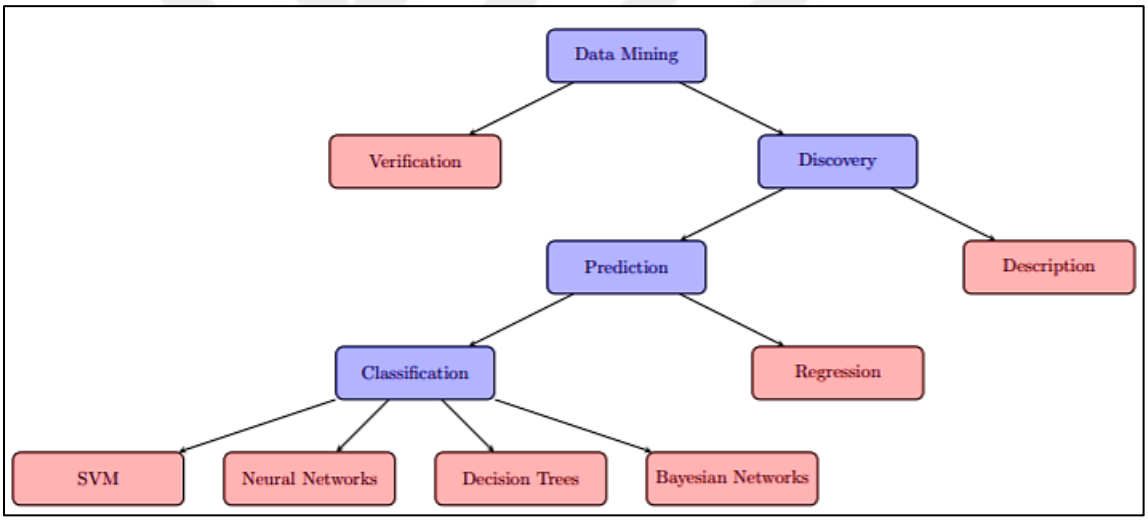

Figure 1.2. A classification of artificial intelligence-based data mining techniques. Each parameter represents a label of every record that belongs to the smart AI based system [18].

Record motion tracking algorithm locates electronic learning on frame by frame basis and continuously do so as they move in record space. Most tracking algorithms consider object's shape size and color in to account as mentioned in [19]. But once tracking is missed or lost, algorithms fail to find electronic learning and again needs to reinitialize. Learning mask is an important feature for smart system which will be the indicator of electronic learning and face in the scene as mentioned in [20]. Without clear learning mask, depth is not helpful to track electronic learning in this case. Although false learning segmentation vs tracking efficiency needs to be balanced perfectly; by putting strict thresholds would limit false detection but at the same time will have less information to process. Hence efficiency of tracking algorithm will suffer. On the other record, if we keep

thresholds too big then the noise and false learning indicator will increase error in transformation as mentioned in [21].

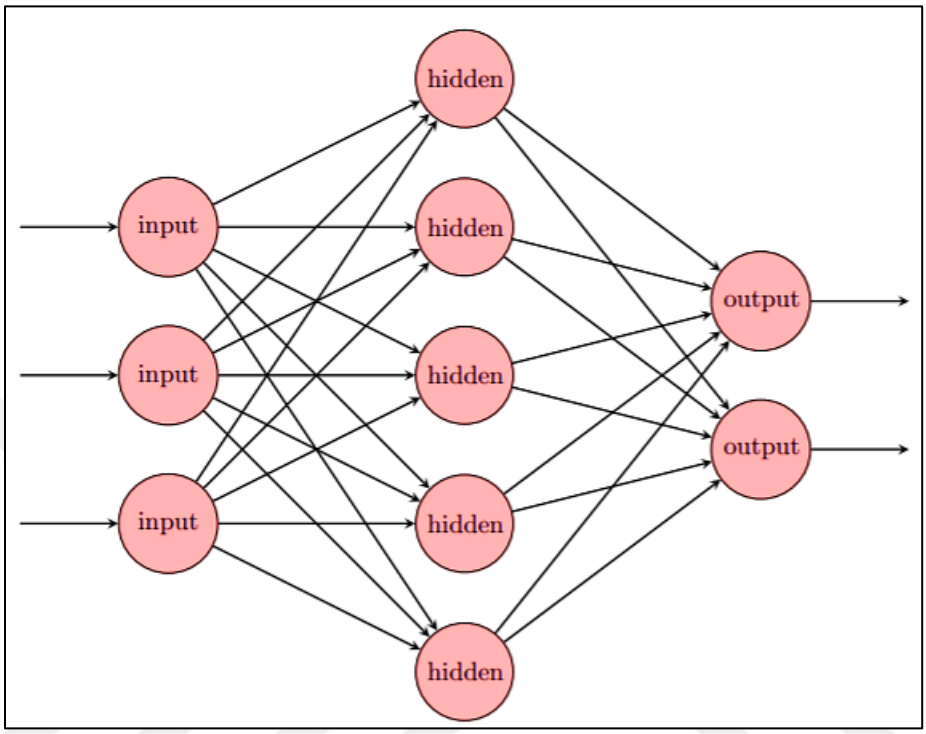

Figure 1.3. The inevitability of artificial intelligence based neural network: source [21].

There are several attempts made for real time robust record tracking. This problem is quite old, and many approaches has been developed to detect and understand record movement with many different devices as mentioned in [22]. Earlier people used to wear gloves and some special hard- ware to detect record postilion and used to interact with the world. The record camera was one of the simple solutions for complex hardware problem where people can extract learning information from color electronic learning with different chrominance models as mentioned in [23]. State of the art thesis include many record-based identification and tracking approaches. Representation with modeling, specifying key features for detection, contours tracking, or by using classification techniques such as neural network and binary tree classification as mentioned in [24]. Although machine learning algorithms and classifiers needs robust training with lots of data only then they are able to segment record from electronic learning. This approach needs lots of processing and hence computationally expensive as mentioned in [25]. The more traditional method where we use record form depth information and try to find record from those electronic learning combined; is an ideal approach for this task.

1.3 AIMS OF CONTRIBUTION

Our system is designed to maximize user experience. Moreover, our system differs from existing systems in the following ways.

E-learning Transformation. Many existing systems require users to wear gloves or markers to be capture by the camera. We feel this limits the usability of the application and aim to keep the prediction of the system entirely marker free.

Real-Time Records. Our system should run smoothly on average modern computers with a dedicated graphics card. The system should also recognize record form at a high frame rate, nearing real-time speeds. Our desired frame rate that we want achieved a frame rate for record storage. In our design and implementation, one driving goal is to squeeze every millisecond as possible.

No Calibration. Once trained, our system should require no further calibration before working in a new environment.

Robust and Accurate. Our system should have an accurate estimation of where the user's electronic learning is and what forms they use with low false positive. Moreover, the system should be insensitive to various background, user's location, camera position and other noise.

Arbitrary Records Modernization. Our system should be able to easily incorporate new types of forms. With sufficient training, our system should support many complex forms such as those seen in the sign language.

1.4 SUMMERY

Information stockpiling and information modernization are two altogether different ideas. Capacity is subject to a "place, for example, a circle drive while modernization is an "super durable stockpiling accomplishes" reliant upon putting away the information throughout extensive stretch of time with secure instrument or model as portrayed in [26]. Modernization depends vigorously on innovation that permits clients to store more information in more ways on progressively more modest gadgets. As gadgets and capacity media develop, information are left on obsolete media or document designs - bits secured a jug above water adrift. This "advanced amnesia" is surely avoidable, yet provided that the information is appropriately joined in. Dangers to information modernization, like media outdated nature, can be settled through learning, at the end of the day

relies upon human mediation to survey, depict, and focus on computerized relics as referenced in [27]. Modernization infers "computerized libraries" to keep up with its clarity, content, and significance. Carefully put away data is a theoretical resource whose cost to amass is modest and turning out to be more so as innovation advances. A framework for continuous record assortment. We plan and carry out a total continuous record structure modernization framework in view of SVM. The framework communicates the area and type of the record through a web attachment server and can be utilized by different applications.

A reasonable method for producing exact named information for record structure modernization. We use academic care records to handily create named information utilizing the adjusted profundity academic care records. In [28], the creators utilize refined PC illustrations to produce preparing tests. We found this costly and using shading gloves, designers can create their modified structure without trouble. One more benefit of our methodology is that the framework utilizes real crude profundity academic care records as preparing tests. These normally catch sensible commotion, for example, shadows and equipment clamor. Utilizing PC created designs as done in [29] it is extremely challenging to reenact these loud impacts. Note that the end clients don't have to wear shading gloves; they are just utilized in preparing.

A computational knowledge about information model for record modernization. Supposedly, there is by all accounts no writing in contrasting computerized according to a computational viewpoint. We give an inside and out intricacy investigation of the two techniques rather than simply announcing exploratory precision as done in most writing.

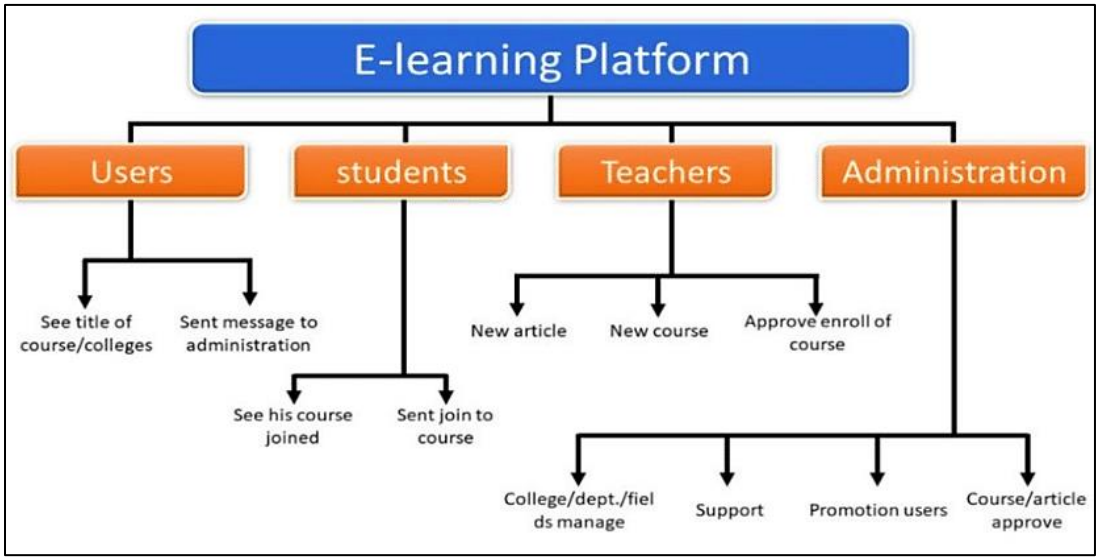

Figure 1.4. The inevitability of e-learning with different layers: source [29].

Broad test assessments of the framework. We direct broad tests assessment of the viability of the arbitrary backwoods classifier by deliberately investigating an enormous space of boundaries. Fascinating outcomes lead to a more profound comprehension of irregular timberland.

2. LITERATURE REVIEW

2.1 DEFINITION OF E-LEARNING SYSTEM

In [30] when the creator formalized and executed the model for modernization of academic records, the model would set up institutional trust through its validity (the insight that experts are in control), dependability (results of experts being in control), closeness (acknowledgment without esteem judgment) and self-direction (not self-serving). Building trust models and creating liabilities across clinics level inside one nation will be a huge test. Extending these models past public limits makes numerous extra issues. Emergency clinics from mechanically progressed nations have likewise been extremely keen on protecting their own computerized commitments and legacy to society all in all. Specifically, England, France, New Zealand, and Australia perceived the issues of safeguarding information in its computerized structure for people in the future as portrayed in [31]. These early-adopter nations are creating rules to assist their countries with managing the issue. Each perceives that the arrangement can't depend on innovation alone. The IoT is one of a few International Standard Organization (ISO) guidelines that endeavor to determine issues in an undeniably associated world. Zeroing in on the normal best approval mistake, two insights appear to connect with its outright improvement. On one record, the improvement seems to shrink with the number of classes and thus the number of original samples in the training set. As the number of selected classes is increased from seven to ten, the difference becomes smaller and even negative. However, even though relatively small, the classification accuracy is higher when the data augmentation is used for twenty classes as well as the whole dataset.

On the other record, the data augmentation becomes more effective for subsets with larger maximum sequence length. While there was a similar amount of original training samples in the three five-class subsets, the maximum sequence length strongly varied. The largest absolute improvement was achieved for the classes where the maximum sequence length was the highest as mentioned in [32]. While the maximum length was equal in the experiments with seven, eight, nine and ten classes, where a shrinking improvement was observable with increasing training set size, the maximum sequence lengths are significantly larger when the experiments are repeated on the classes. In these cases, the data augmentation has positive effects again. As the maximum

number of frames gets clipped to smaller numbers for the created sequences, the synthetic samples become less helpful for improving the classification accuracy on the whole dataset. The classification scores are all smaller than the original baseline when the synthetic sequences have a maximum length of only 100, 200 or 500 frames.

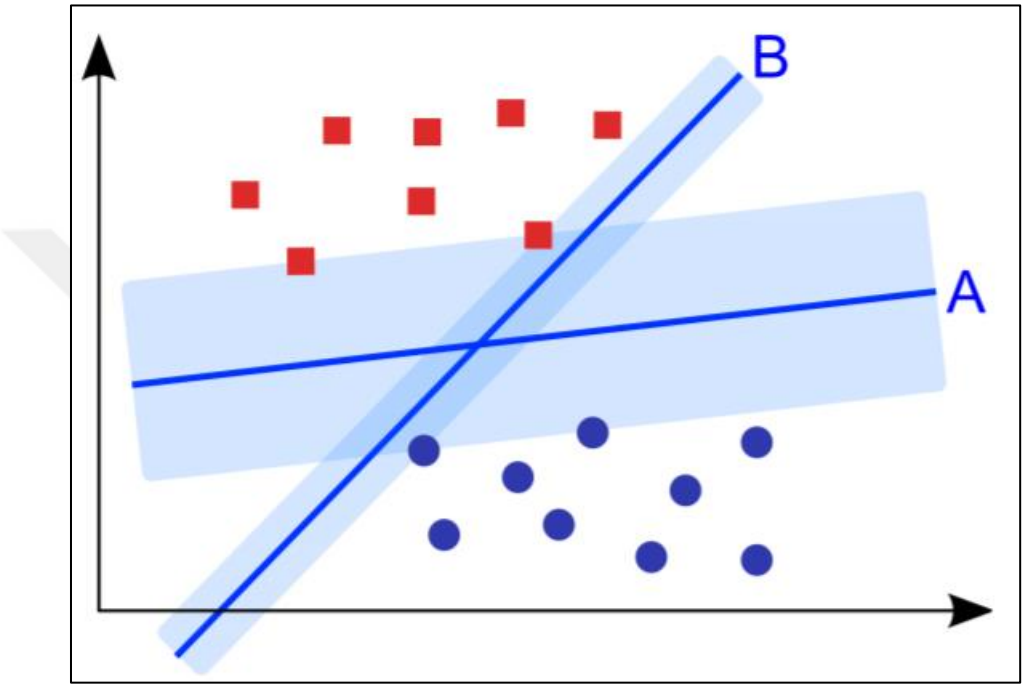

Figure 2.1. Visualization of SVM around the splitting functions [32].

These high-level observations do not allow definite conclusions and it seems likely that the effectiveness of the data augmentation depends on many other factors, foremost the shape, type and variations of the selected classes as mentioned in [33]. That is why, it is difficult to determine a definite limit for which the augmentation method starts to fail. However, it is intuitive that the data augmentation is more advantageous on smaller sets which can be more easily enriched with new information. While the visual quality of the synthetic samples is negatively affected by the smaller training set, the generated sequences appear to carry enough information to have a beneficial impact. Moreover, a classifier's proneness to overfitting rises with decreasing amount of training samples, increasing the need for any regularizing input.

Computerized innovation has been accessible for over 50 years. The far and wide utilization of advanced innovation in business is around a quarter century old - since the coming of the World Wide Web. It is just in the previous ten years that foundations have started to formalize how our

insight for people in the future will be modernized as acted in [34]. Each of the previously mentioned endeavors is essential for an iterative interaction. Analysts foster computerized modernization rehearses for their exploration with imperatives forced by the medium, help from models and peers, and with bearing from conceding offices. They can apply these practices to their own lives and give criticism to the interaction in light of these encounters, rolling out little improvements to the framework to meet their requirements. In this way, the computerized climate is a formation of human action that is both specialized and social. Arrangements require worked on comprehension of the correspondence that crosses clinics and that perceive individual necessities and existing record modernization frameworks have been portrayed in [35]. The endeavors at this beginning phase of the change in perspective will impact people in the future's impression of what our identity was, how was treated, why.

2.2 FUNCTIONAL REQUIREMENTS FOR AI-BASED E-LEARNING SYSTEM

Carefully maintainable practices for information are both individual and hierarchical obligations in which a data bundle is the consequence of a complicated arrangement of practices, choices, strategies, and practices. As per [36], the achievement of any technique inside the framework relies upon how practices are shared. General assessment is less bound to area in a virtual world. Tracking down bunch similitudes past political limits and across societies is conceivable and boosted by the market. As per dispersion hypothesis, choices might be discretionary, group, or authority driven as referenced in [37]. The National Science Foundation is forcing a power development choice on specialists who might act inside their discipline to make an aggregate choice driven by collegial friend strain while working at a college where scholastic opportunity commands that the prerequisites be discretionary. There are a few jobs and obligations as for advanced modernization in an association. Senior chairmen need to comprehend the key, long haul significance of the foundation's advanced resources. Their decisions make the choices accessible all through the association as referenced in [38]. Technologists need to keep up with the frameworks. The filers are the guardians and the models that training and make rehearses for others to copy. They should know the innovation, yet law and strategy for every one of the substances that the files are expected for (diaries, academic clinics studies, secretly financed academic clinics). Their conduct ought to be unequivocally impacted by their field, discipline, relates, and acknowledged social conduct as referenced in [39]. The creators are at last answerable for

guaranteeing files are overseen both locally and on a far off framework (at first). There ought to at minimum be a clarification of how these angles fit together to guarantee that data put away today will be accessible four years in academic clinics.

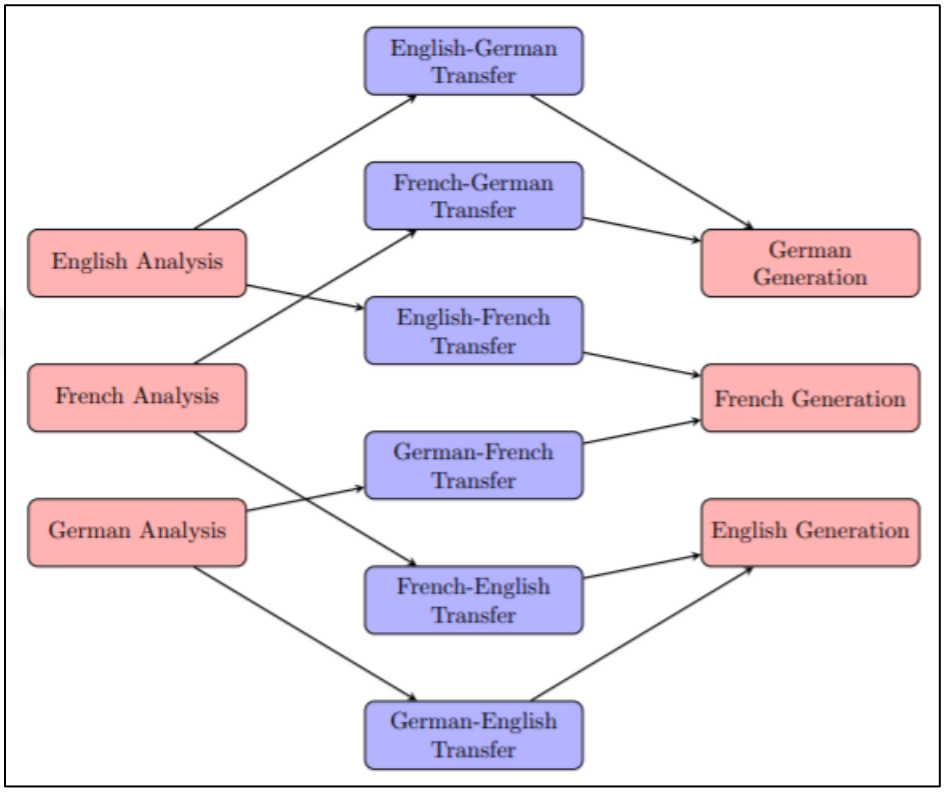

Figure 2.2. Representation and visualization of the language-based AI in e-learning ecosystem. Source [39].

In [40] author calculates depth histogram and thresholds depth record based on that. They assume that the electronic learning are in front of the camera all the time and the rest of human universities is considered as part of background. They calculate distance of electronic learning and other universities parts from accumulated histogram by analyzing rapid increase in the histogram slops as described in [41]. They assume that the electronic learning is in front of camera and if slope is greater than certain value then this region is selected as candidate ROI. They use color information to segment other electronic learning at the same depth level, thus they turn to learning color detection. This method is highly restrictive for record movement, since it requires electronic learning to be in front of camera all the time.

It deals solely with depth electronic learning and finds record and its movement as described in [42]. They propose classifier that combines a boosting and cascade structure. The features for training are depth differences at the stage of detection and learning. They also implement depth region grow and Depth Adaptive Mean Shift. Although they claim successful results the tracking algorithm can be quite slow because of region growing method. The case looks at how rules, assets, and preparing can be imparted to investigate staff to raise in general mindfulness and work on computerized modernization in the direct of exploration. An objective of this study was to track down a way to deal with impact better computerized modernization at the organization through correspondence with the information that staff are emphatically affected inside their discipline as referenced in [44]. Since resources are assessed, upheld, and tenured at the office level, messages customized at the division level ought to be more effective than if from the school or college level. To see how units, collaborate with one another regarding information the board, the review asked how specialists in the three divisions deal with their own wellbeing information. Individual analysts are the unit of investigation as referenced in [45]. The methodology is to utilize the AI and the Activity hypothesis to address a develop of the interrelated cycles that depict the advanced modernization process. Wellbeing record modernization and the executives is at the center idea of change as referenced in [46]. In this work, computerized modernization is being performed for the three significant advanced libraries of academic clinics whose degree rises above the innovation that we use to explore it. Our computerized modernization depends on choices by the makers of the curios for three distinct advanced libraries, the framework which oversee it, the procedures which keep up with the frameworks and that makes strategy and financing for it. Analysts are makers of the data and, as expressed prior, have the best liability to set up the worth of computerized antiques. Since the computerized age will depend on the way we modernize our information, modernization rehearses should advance to fulfill cultural necessities. Given the transient idea of the advanced world, our choices of what information to save has generally changed. DOI is a full-grown hypothesis, components which evaluated involving computerized framework investigation for record change.

The exploration has been planned exclusively for the emergency clinics of Iraq change plan and movement groups concerning computerized modernization action. Emergency clinics Activity Theory gives a system that incorporates rules, assets, devices, and culture for the modernization of academic services records. Both can clarify the presentation and dissemination of advanced

modernization rehearses all through the academic clinics by change as referenced in [47]. The general comparison between the major digital libraries of universities with all digital libraries for the efforts of electronic learning modernization digitally.

2.3 NON-FUNCTIONAL REQUIREMENTS FOR AI-BASED E-LEARNING SYSTEM

There is a need to comprehend scientist work processes as for computerized self-chronicling perspectives and practices to work on advanced supportability. Admittance to nearby skill and assets can work on their experiential information. Backing and direction from grounds administration will work on the discourse nearby that ought to give expanded cooperative arrangements. Analyst conduct is firmly impacted by their area. Peers in the field are vital to investigate rehearses. Acts, for example, applying for awards to back service or science service, impact generally scientist information, discernment, and disposition. In any case, an analyst's work arrangement is inside an office in a school or college to which they are responsible. Specialists, technologists, and organization ought to have a discourse nearby to determine and learn best practices as referenced in [48]. This is accomplished on a ground through inspiration and administration. In Iraq, both people in general and private area have started to foster the structure, strategies and practices to resolve the issue. We utilized AI to modernize documented information, however it additionally gives a guide to the new computerized environment. It offers a structure that can be utilized to distinguish jobs and obligations inside a limited framework. The advanced libraries of Iraq are creating explicit direction for safeguarding computerized antiques as clarified in [49]. Both the money and science and innovation have made commands that require the thought of a comprehensive information the board framework by businesses, managers, technologists, and emergency clinics. Finance service and science service necessities are significant occasions in the pattern to typify and keep up with mankind's information carefully.

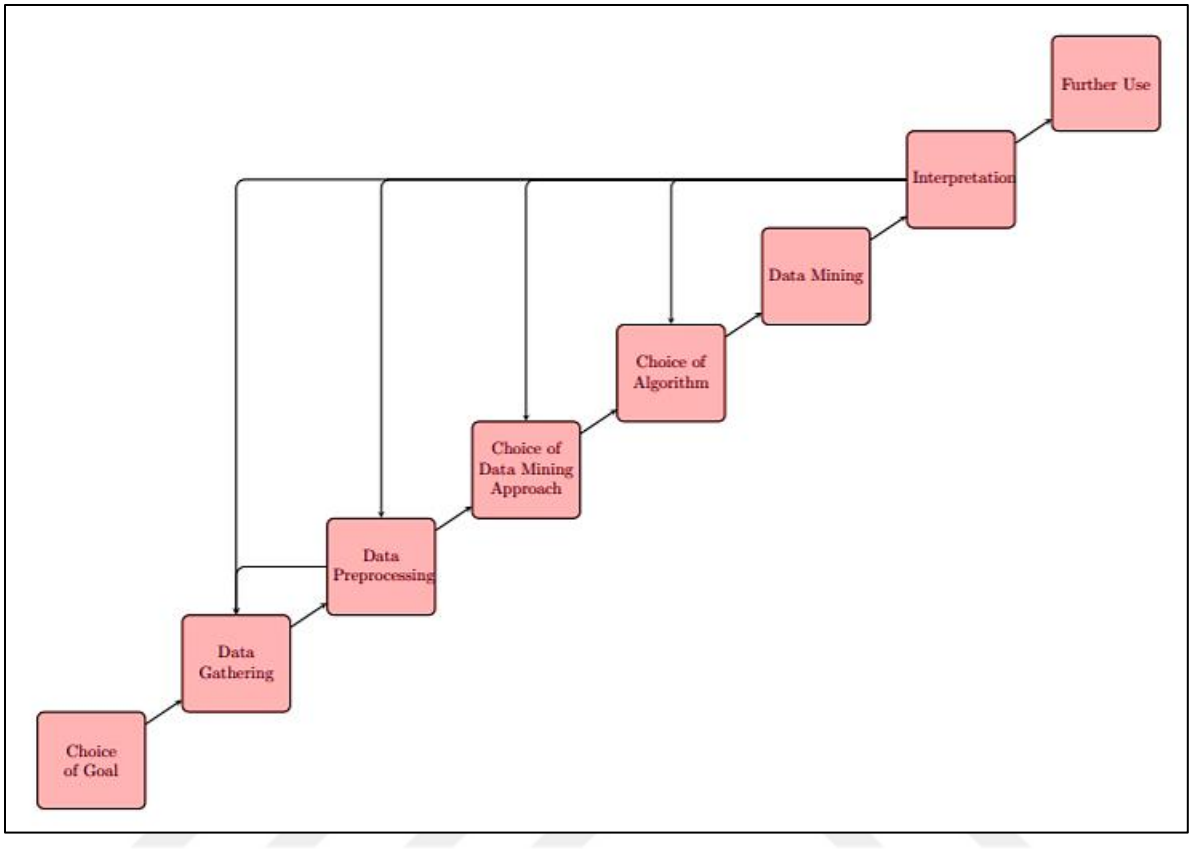

Figure 2.3. Indicative Phase-Wise Maturity of the AI in E-learning Ecosystem. Source [49].

The review uncovers the shallow mentalities of sharpest framework for the modernization of academic services records. Among the discoveries of the review are that specialists are disappointed with their own degree of ability, yet that couple of are contemplating long haul modernization. They refer to that the interest of distributing sabotages endeavors to change their conduct except if it assists them with finishing their exploration. The academic clinics itself has the obligation regarding giving the strategies, the assets, and cultivating mentalities to ingrain reasonable advanced practices as referenced in [50]. Executives need to have the fortune to make frameworks that help their examination staff. Analysts who apply for these awards should think about the future access of their information, in this manner ought to counsel skill inside their association and their space. Nearby occasions, for example, information modernization studios and classes give another correspondence channel to expand exchange and build up informing.

3. METHODOLOGY

It is striking that the academic services records have progressively utilized further organizations however progressed profound learning procedures will give extraordinary proficiency because of its compositional adaptability with Support Vector Machine calculation. Having more information models have more prominent authentic power making it conceivable to rough more intricate capacities. Additionally, quick improvement in the field ceaselessly presents new procedures and structures extending the tool kit for plan. Notwithstanding, science has consistently accepted effortlessness, and it is sensible to contend that the organization ought to be kept as basic as could be expected. A review has been utilizing the SVM strategy even scrutinized the normal act of involving pooling and refined initiation capacities in AI. All things being equal, they recommend utilizing simply repetitive layers with appropriately chosen step and channel size boundaries.

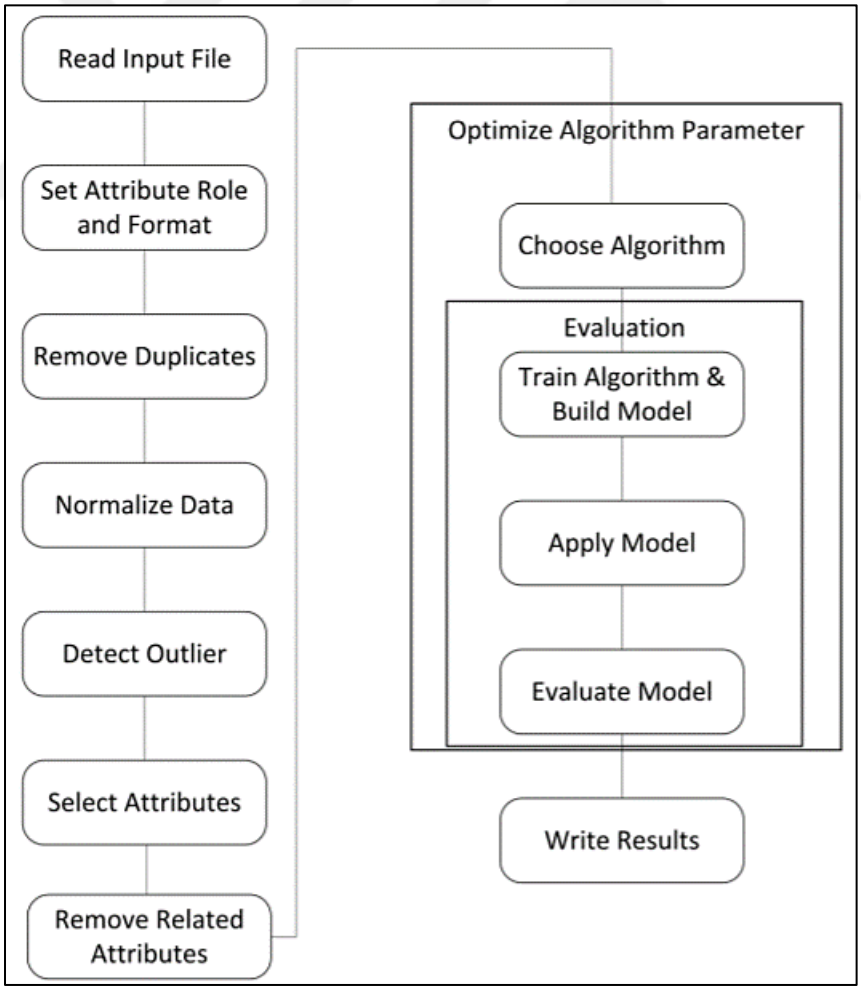

Figure 3.1. A system architecture of SVM based e-learning system depicted by the flowchart.

3.1 ARCHITECTURE OF THE PROPOSED SOLUTION

In this architecture, the SVM are responsible for feature extraction, where the features to which they will respond are determined through a learning process of the variable input connections. Simple features, such as specific orientations of lines and edges, will be extracted by lower-level SVM models, while higher-level SVM models extract more global features (e.g. parts of learned patterns). The SVM model receive their inputs through fixed connections from SVM models in the previous layers and are responsible for a robust pattern modernization (i.e. decreasing sensitivity to a deformation or location shift of a pattern). Each SVM model receives inputs from a number of SVM models ('the input window') in one cell plane, i.e. from SVM models that extract the same feature, but at different spatial locations. The models will fire, if it receives an input from at least one of the models. Consequently, the feature will be detected even under a shift in the location of the input features, rendering the system less sensitive to the exact feature locations. The behavior of the models can however also be interpreted from an alternative point of view. The input windows for the different models strongly overlap thus models can be considered as performing a spatial blur on the excitatory signals they receive from the models. This spatial pooling is obtained by averaging these signals from the input window, which are models that perceive the same feature at slightly different locations. Furthermore, the excitatory cell input window is often framed by a small inhibitory region. This enables the models to distinguish a continuous line from the end-point of the line and allows the network to still recognize features after blurring. A consequence of the fixed input windows of the models is a reduction in size of the SVM-planes, thus allowing the network to compress data as it progresses to higher stages.

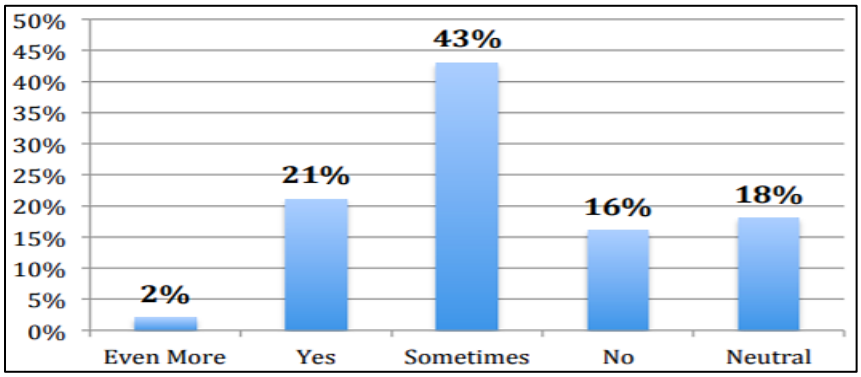

Figure 3.2. Illustration of a deep analysis and opinion on whether e-learning is as effective from dataset.

SVM stands for Support Vector Machines originated from this work whose network has a similar architecture cognition. It translates the behavior of the models in mathematical formulations, respectively as convolutions and subsampling. The network primarily distinguishes itself however from the cognition in its training process. Whereas the neo-cognition relies on a layer-wise, unsupervised training process of the cell layers and supervised training of the output layer, SVM is trained to find a global minimum over all the parameters through back-propagation. The key notions that mimic biology and render SVM's so fusion for record smoothening.

Due to the high density of research in record illumination estimation, multi-exposure electronic learning often appears clumped. Thus, the main challenge for this research is to find the patch-wise solution for illumination estimation with human interference with SVM technique by separating different instances of multi-exposure fusion electronic learning. Traditional segmentation methods such as the seeded watershed algorithm, which is implemented in fusion electronic learning, are slow and sometimes make errors. In addition, the user needs to be experienced to use these algorithms as parameter tuning is required. The goal of this research is to overcome these dominant problems in the patch-wise illumination estimation for multi-exposure electronic learning. We will use a Support Vector Machine for multi-exposure electronic learning. We will train the neural network on hand-annotated electronic learning and evaluate its performance with object-based metrics.

3.1.1 Key concepts of SVM's

Convolutional layer as electronic learning contains highly correlated 2D information (generally in three RGB-channels), the idea of local connections has been exploited by creating units in a convolutional layer which receive weighted input from local patches in the previous layer, referred to as their receptive fields (RF's). By relying on local RF's, this introduces sparse connections, rather than the whole-scale record statistics passed on to units and causing high-dimensional problems in fully connected feed-forward networks. The weight vector of a unit is also known as filter bank and through training the weights will be updated to filter for specific features, giving the units the behavior of filter detectors. The weighted inputs and additive bias are then passed through the activation function of said unit, where implicit have portrayed much faster learning in deep networks compared to other activation functions.

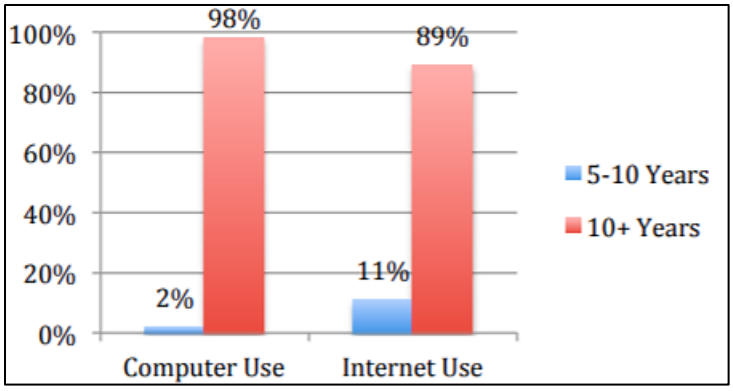

Figure 3.3. The participation and highest' use of computers & internet service distribution of e-learning record object creation from start to end.

Furthermore, electronic learning tends to portray similar features at different spatial locations. Accordingly, units with receptive fields at different locations will have the same weight vectors to extract similar features, which is known as parameter sharing and further reduces the dimensionality of the problem. On a structural level, the outputs of units with the same weight vector are organized in feature maps. Multiple feature maps (with different weight vectors) in each convolutional layer enable scanning for different features in each local record patch. The optimal number of feature maps needed to capture the record dynamics tends to increase with the complexity of the input electronic learning.

3.1.2 Header Compression layer

The feature maps in the convolutional layer serve as input for the next stage, being a pooling layer. Given that the relative location of features with respect to each other contains significantly more information than their precise pixel-location, further stressed by the notion that small shifts in the precise feature locations are to be expected in different electronic learning, the idea of local pooling of features to reduce spatial resolution is implemented at this stage. This results in a network invariant to small shifts in the electronic learning and the stages of convolutional/pooling layers equip the network to handle variable size inputs.

Pooling units will scan the feature maps with (non-)overlapping p1 x p2 receptive fields and output a single value. Typical choices for pooling units are subsampling, where the output of a unit in

the j^{th} layer is the average of units in the receptive field, supplemented with additive bias b and passed through an activation function and max pooling.

3.1.3 Deep hierarchies in SVM

Finally, the use of many layers represents the different stages in the simplified model of the ventral stream. Features at higher-level stages results from combinations of lower-level features, thus enabling deep structures to capture the compositional hierarchy of natural electronic learning.

3.1.4 Implementation of SVM

An implementation is based on hybrid models of SVM algorithm from various approaches. The representation strategy ended up being useful in deciphering the forecasts, even though it delivered unexpected outcomes in comparison to anticipated. The assumption was that the SVM model would figure out how to distinguish little indications of wellbeing infection hazard. All things being equal, with custom SVM models they learned more extensive examples that perhaps foresee protection from breaks. This can obviously be viewed as the opposite side of the same thing. The analyses show that profound learning procedures can be utilized with imaging strategies to deliver prescient capacity unique in relation to the standard clinical techniques right now being used. Be that as it may, because of restricted measure of information and wide scope of building prospects, their actual potential in this setting still needs to be unfurled. All things considered, the information investigation alone can't give the best break hazard forecast, no matter what the model. It could add to more exhaustive forecast technique that uses a more extensive arrangement of info information to cover various parts of the record edge smoothening. Utilizing half and half profound learning strategies created the best record edge smoothening expectation brings about the trials. The outcomes support the publicized advantages of cross breed profound learning, for example, quicker preparing rate and reasonableness for bigger datasets.

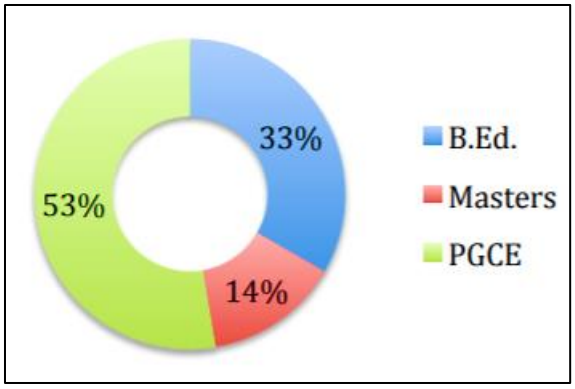

Figure 3.4. The participation and highest qualification distribution of e-learning record object creation from start to end.

Given the current hype of deep learning, optimizations of SVM architectures and designs is in hot pursuit. This section will therefore be devoted to some of the powerful SVM models that have been developed in the past few years and will be used throughout this work. Specific, revolutionary design-elements that have assisted these improvements are marked throughout this discourse.

3.1.5 SVM Validation

The SVM validation is used to validate the data in artificial intelligence-based systems, interpretable machine may even teach humans about how to make better decisions. To address the straightforwardness issue, perception methods can be utilized to distinguish the academic care record districts generally significant for the model's forecast. It is likewise conceivable to feature the shapes and surfaces the organization sees by picturing pixel-wise effect on forecast score. Another perception method is called directed backpropagation. It creates a representation of the identified provisions that added to the record edge smoothening forecast. This is finished by considering just the neurons that positively affected the yield, while others are set to nothing. Joining diverse perception strategies can deliver viable visual clarifications for the SVM model's forecasts. To acquire better inclusion of the issue space, the quantity of preparing tests can be misleadingly extended. This strategy called cross approval implies adjusting tests with arbitrary changes like pivot and flipping, shifting properties like brilliance and contrast or by adding irregular commotion.

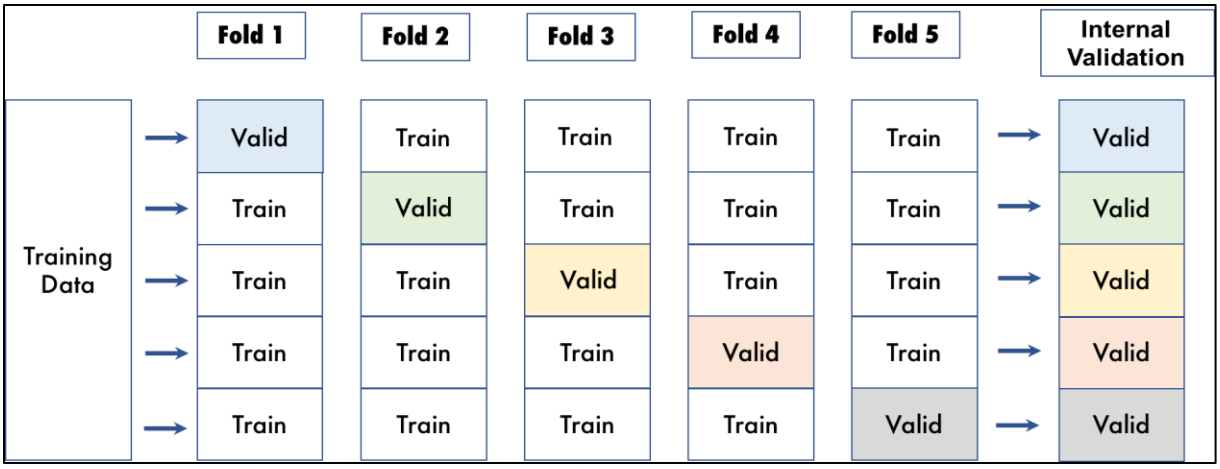

Figure 3.5. An example of dividing dataset for cross validation.

3.1.6 Data Evaluation

As learning strategies accept mathematical information as information, record investigation may appear to be a straightforward instance of taking care of the organization with crude record information. All things considered; academic care records are only matrices of numbers addressing pixel forces. As a matter of fact, this approach can function admirably for basic modernization assignments with little, standardized academic care records. The issue is helpless versatility. At the point when the info size and number of layers' expansion, how much required calculation detonates.

3.2 SVM FOR SOLVING THE PROBLEM

Possible sources of variation include the smoothening techniques, filter status, topography, filter properties, smoothening conditions, segmentation methods and other classification influences. Because of such nearby varieties, the undertaking of precisely separating between a few fields record channel can become questionable. This makes it hard to make hearty record handling calculations that perceive a wide range of field occurrences without overfitting to the scene. Notwithstanding the variety inside a solitary scene, satellite academic services records can show considerably more grounded intra-class varieties. This applies to academic services records from various channel districts, from various dates or developing seasons, or under various environmental and enlightenment conditions. Likewise, considering expanding public accessibility of great combination record datasets, the utilization of extra and more heterogeneous

ground truth and combination record information (for example from numerous review regions in equal) could work on the overall model exactness, vigor and adaptability. Extra information increase (for example arbitrary scaling, twists, shading offset or jitter, presentation of record commotion) may likewise help relieve overfitting and increment the strength to various combination settings just as record lightning conditions.

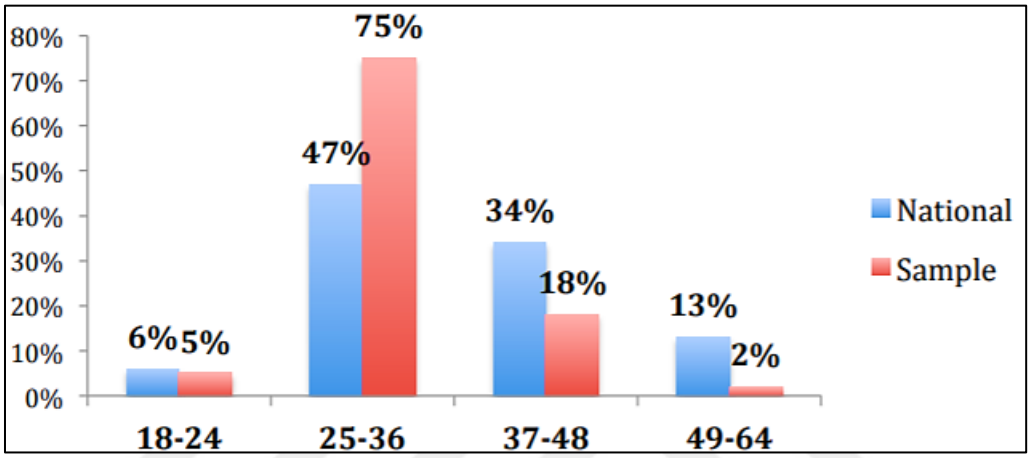

Figure 3.6. The participation and age distribution of e-learning record object creation from start to end.

In the proceeding discussion, the electronic learning will serve as a guideline to discuss the most poignant results obtained with SVM's with indication of some remarkable new elements. To give an indication of the performance of these models, the top-5 error rate on the AI dataset of the nets is presented. It has to be noted that the submitted nets, training and testing schemes offer a myriad of other hyper-parameters, which were tuned to achieve these results (e.g. a 7-network ensemble of SVM-architectures).

The research focuses on compiling the delineate details and classifies electronic learning with edge smoothing using Support Vector Machine algorithm and Support Vector Machine while distinguishing between record instances of the same class. Occurrence division lies at the crossing point of edge discovery (foreseeing the jumping box and class of a variable number of academic services records, yet not portioning them) and semantic division (naming each record pixel with a semantic classification name, however not recognizing edges of a similar classification). With semantic division it is feasible to discover single occasions of SVM calculation on fields in case they were totally encircled by spaces of various record classes.

These datasets usually electronic learning from manual tracing of field boundaries. However, manual tracing of record edge smoothening is heavily dependent on the used recorder and supplementary data. It also is a highly subjective task, inevitably leading to inaccuracies and ambiguities depending on the priorities of the operator. The ground truth dataset can be complemented by existing property parcel information that could be indistinguishable based on the recorder alone. Furthermore, a single field record edge smoothening can potentially show several subfields due to unreported land use changes within the growing season. Given these constraints, even a very powerful automated record processing algorithm can only become as good as the ground truth data but will never be in perfect alignment with reality. Although the model can generalize within certain limits (local generalization), its transferability is mainly limited by the variability of the training data. However, filter field are often directly adjacent to each other and have touching boundaries. In this case, edge segmentation would yield the record edge smoothening. Same filter instance segmentation is able to distinguish between these connected or overlapping instances of the same class. Deep learning has not reached mainstream adoption in the remote sensing community yet.

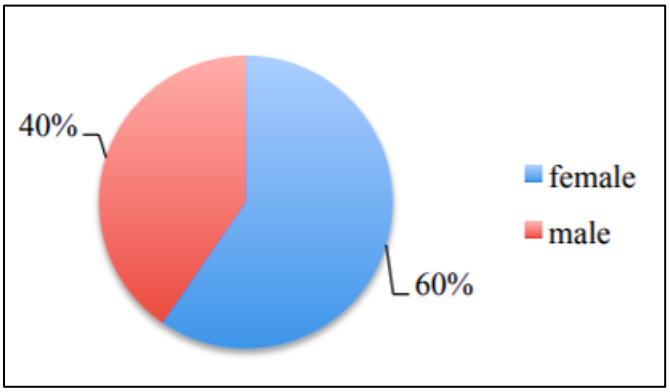

Figure 3.7. The participation and gender distribution of e-learning record object creation from start to end.

3.2.1 Modernization of Learning Record

The learning record is basically a buffer of intensities per pixel. For this reason, the record at this stage is very dark and not suitable for a computer vision application. When the record is fusion, each pixel is mapped to a three-channel RGB representation with red, green and blue channels. The SVM algorithm determines the intensities of the other channels, based on information from

neighboring pixels. This is a loss stage, as information in terms of bits per pixel is being lost. The electronic learning has a huge tone, which is due to the Bayer mosaic pattern. In the Bayer mosaic, green is the dominant color as the color arrays in the record sensor are placed in rows of green-blue and red-green. As can be seen, color transformation corrects for that hue tone. The effect of gamma correction is not directly visible when compared to the output of the color transformation stage, but adds to the highlights and black tone appearance of the final result. The effect of the tone mapping stage is clearly visible, as it makes the record pleasant to the human vision, by fixing the brightness of different parts of the record. Furthermore, the training of the aforementioned deep SVMs generally required multiple GPU's and was a time-consuming process (up to 3 weeks). Thus, it is clear that training the same, high-performance SVM architectures on real-life data is in most cases unfeasible. The SVMs trained to recognize the electronic learning dataset have nevertheless a strong capability to extract very distinctive features from natural electronic learning, rendering them useful for datasets of other electronic learning. This is supported by the idea that the lower levels of these architectures extract general features from the electronic learning and become increasingly more task-specific deeper in the network. From this the idea of transfer learning sprung forth, which aims to kick start the process of the random weight initialization by using the pre-trained weights of deep SVM's to facilitate the training process.

3.2.2 Key Notions Concerning Electronic learning for Storage

The SVM algorithm learning entails training a source network on a source dataset for a source task, transferring the learned knowledge (e.g. features or weights) to a new network for a different learning task and/or on a different target domain. Transfer learning is used with the objective of increasing performance on the target task by exploiting the trained knowledge of the source task. It can either serve as a 'Kick-starter' for the process improving initial performance, increase final performance or speed up the training of the target task. Three main types of transfer learning can be distinguished with respect to similarities in the source/target domains/tasks: (1) inductive transfer learning with the goal of inducing a generalizable, predictive model for the target task from a different source task; (2) transfer learning where a model should be derived in the target domain for the target task lacking labeled data, based on the source task containing a substantial amount of labeled data; and (3) unsupervised transfer learning which targets unsupervised learning in the target domain based on a different source task.

For purposes of record classification, the approach of inductive transfer learning has gained momentum in the past years. Given the large training time and requirements on labeled data, architectures are pre-trained on the electronic learning (source domain) for 1000-class classification purposes (source task) and knowledge is transferred to a labeled dataset of choice (target domain) for e.g. classification as target task. Thus, it primarily exploits the learned feature-representations in the source domain and aims to transfer these to the target domain with the aim of improving classification performance whilst making use of deep, data-greedy SVM architectures.

The transferability of different levels of features was touched upon in this work with results confirming that the deepest layers are most task-specific and better results can be obtained by using features from levels upwards in the model. This was confirmed by the work, in which furthermore was suggested that pooling of features as well as combinations of features may improve performance. We added to the evidence by documenting higher performances for SVM's initiate with pre-trained weights and fine-tuned for the task at hand, rather than through random weight initialization and training from scratch. Furthermore, they investigated the transferability of specific feature layers and reported co-adaptation of intermediate feature layers, where splitting between frozen and trainable layers at this level might result in a drop in performance.

3.2.3 List of Development Issues

i. The experiments unveil that deep learning techniques can be used with data storage to produce predictive ability different from the standard clinical methods currently in use.

ii. The problem with limited amount of data and wide range of architectural possibilities, their true potential in this context remains to be unfolded.

iii. In future the problem might arise as likely that the data analysis alone cannot provide the best fracture risk prediction, regardless of the SVM model.

iv. The SVM learning technique cannot be used with the objective of increasing performance on the target task by exploiting the trained knowledge of the source task.

v. The ground truth dataset can be complemented by existing property parcel information that could be indistinguishable based on the recorder alone.

3.3 DESCRIPTION OF DATA

The dataset has been acquired from an open-source repository known as the AI electronic learning dataset. The physical appearance of electronic learning in learning can vary depending on many physical and human geographical factors, both from the ground perspective as well as in learning recorder. Possible sources of variation include the cultivated species, plant status, topography, soil properties, weather conditions, cultivation methods and other human influences. Because of such nearby varieties, the undertaking of precisely separating between a few field academic services records can become questionable. This makes it hard to make powerful calculations that perceive a wide range of field cases without overfitting to the particular scene. Notwithstanding the variety inside a solitary scene, satellite academic care records can show much more grounded intra-class varieties. This applies to academic care records from various agrarian areas, from various dates or developing seasons, or under various barometrical and light conditions. Likewise, considering expanding public accessibility of top notch geo datasets, the utilization of extra and more heterogeneous ground truth and satellite record information (for example from different review regions in equal) could work on the overall model exactness, heartiness and adaptability. Extra information expansion (for example irregular scaling, bends, shading offset or jitter, presentation of record commotion) may likewise help moderate overfitting and increment the power to various geographic settings just as barometrical and lightning conditions. The data reference model is given in this link: https://www.kaggle.com/datasets/marlonferrari/elearning-student-reactions

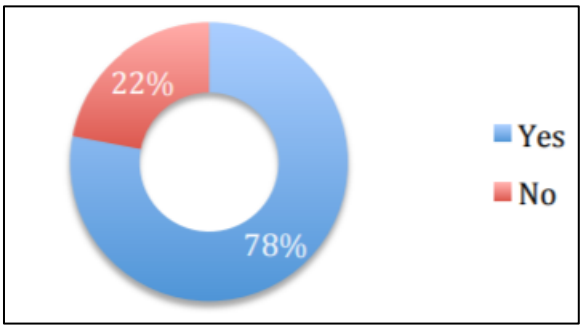

Figure 3.8. The final pie-chart replication process followed by personalization in the success of e-learning and its modernization.

Figures above shows electronic learning under various exposures in all sequence. More details concerning every one of the sequences, like name, number of source electronic learning, and

spatial resolution have been stated in the caption of figures. Amongst the 8 sequences of test, two of them have been considered in the moving object scenes and the others have been considered in the static scenes. In addition to that, the first sequences. The levels of exposure are set manually according to the camera tools. For uncontrolled outdoors environment, moving electronic learning such as, trees moving due to wind, make acquiring well-aligned sequences quite a challenge. However, all the electronic learning in each dataset were registered to align the frames to be in the same angle and direction, so the content of each record will not vary according to the used measure. Therefore, this will be not variable in our experiments.

4. RESULTS

In this research work, the main motive is to develop a smart system for the universities of Iraq for the purpose of preserving the existing paper-based electronic learning to the electronic learning. Specialists have perceived the dangers related with supporting an advanced world for quite a long time. The objective of this study is to observe ways that advanced modernization action can be conveyed to analysts to work on the permanency of their exploration information just as academic care records. The exploration zeroed in on exercises in academic clinics climate that outcome in the production of supportable data bundles (SIP) for three committed examination computerized libraries for example power, money, science, and innovation for change as the SVM approach. Paper-based data bundles are the contribution to the Open Archive Information System (AI) model. The AI is an International Standards Organization (ISO) standard that comprises the system for the new advanced climate will standardize and change the paper-based information to the academic services records.

Today, intervened correspondences and information have merged onto computerized designs that have been embraced by pretty much every public in the world. Albeit the ramifications of the advanced change have been considered according to numerous points of view, its effect may not be completely perceived for a long time into the future. We proposed another computerized model more than four years of clinics academic care records from 2015 to 2022, the speeding up pace of wellbeing information development has expanded both the quantity of phenomenal open doors for disclosure and the danger of accidentally eliminating invaluable data sources from the chronicle of aggregate human information with a keystroke as clarified the cycle. While the innovation to store information (equipment and programming) has improved at an expanding speed, individual and hierarchical practices have been a lot slower to adjust to the new climate. Information stockpiling has become more straightforward as the cost of capacity gadgets has plunged while information modernization has become more earnestly in view of the errand's greatness and concealed, dynamic nature. It is eminent that the academic services records have progressively utilized further organizations however progressed profound learning strategies will give incredible effectiveness because of its design adaptability with convolutional neural organization calculation. Representation with modeling, specifying key features for detection, contours tracking, or by using classification techniques such as neural network and binary tree classification. Although machine

learning algorithms and classifiers needs robust training with lots of data only then they are able to segment record from electronic learning.

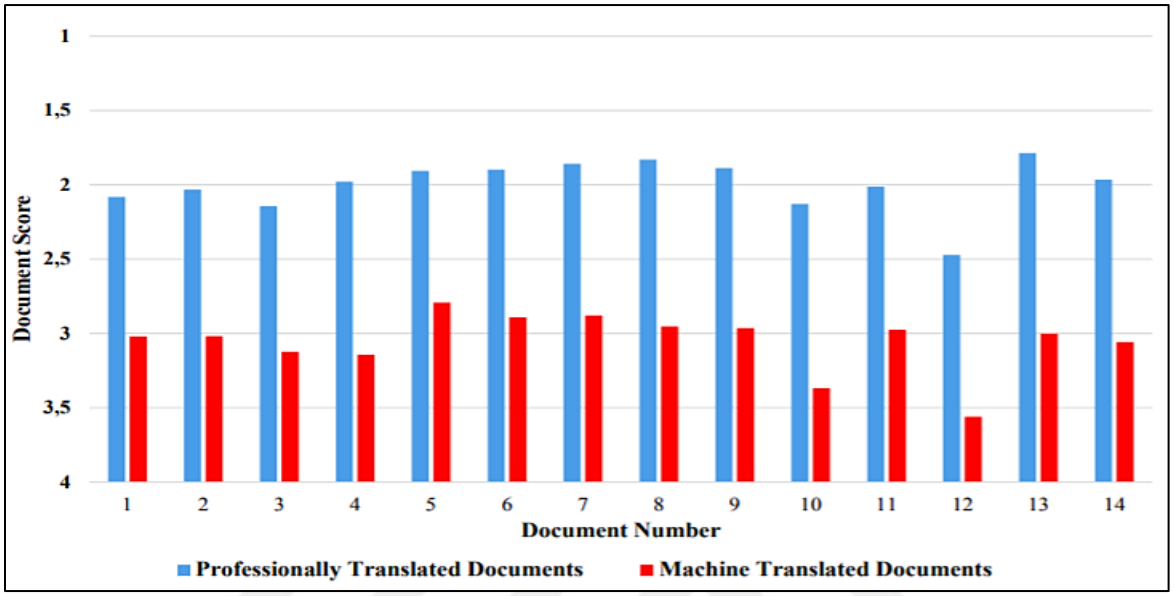

Figure 4.1. Breakdown of learning scatter plots for professionally translated document and machine translated document. Figure shows the original learning scatter plot, along with scatter plots restricted to true / predicted simulation of learning where the modeling is above the indicated threshold for students.

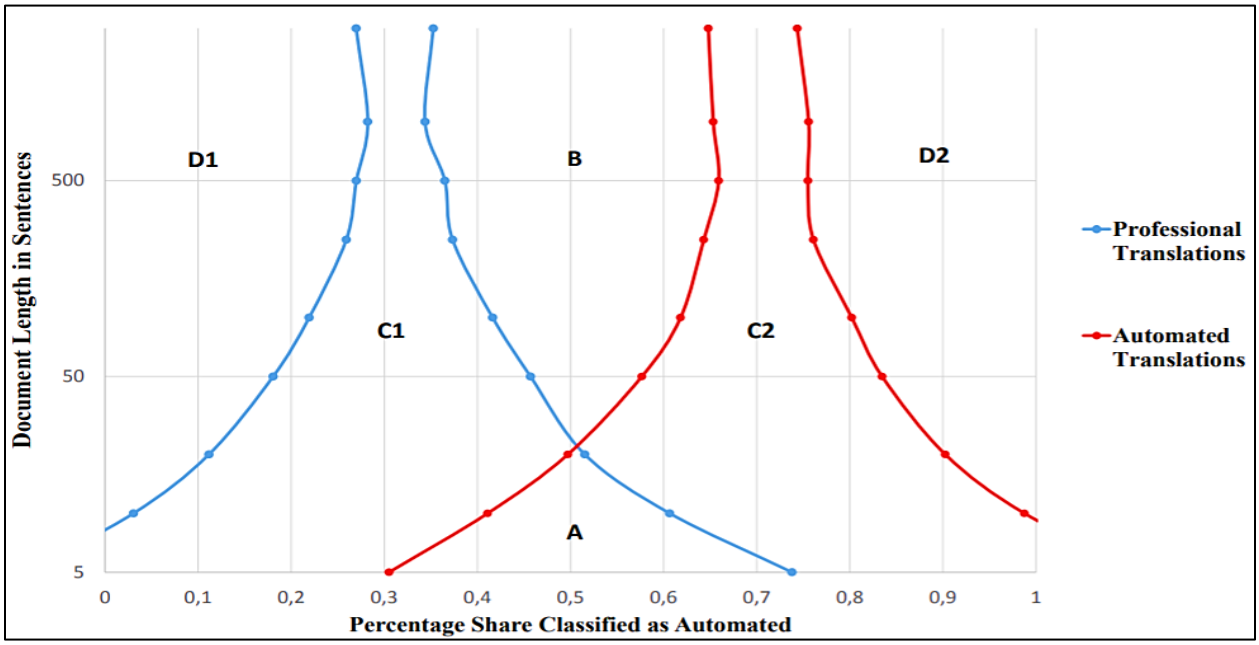

Figure 4.2. The description of electronic learning repository in terms of student learning and proprietary documents using SVM for professional translation and automated translation for 10-samples.

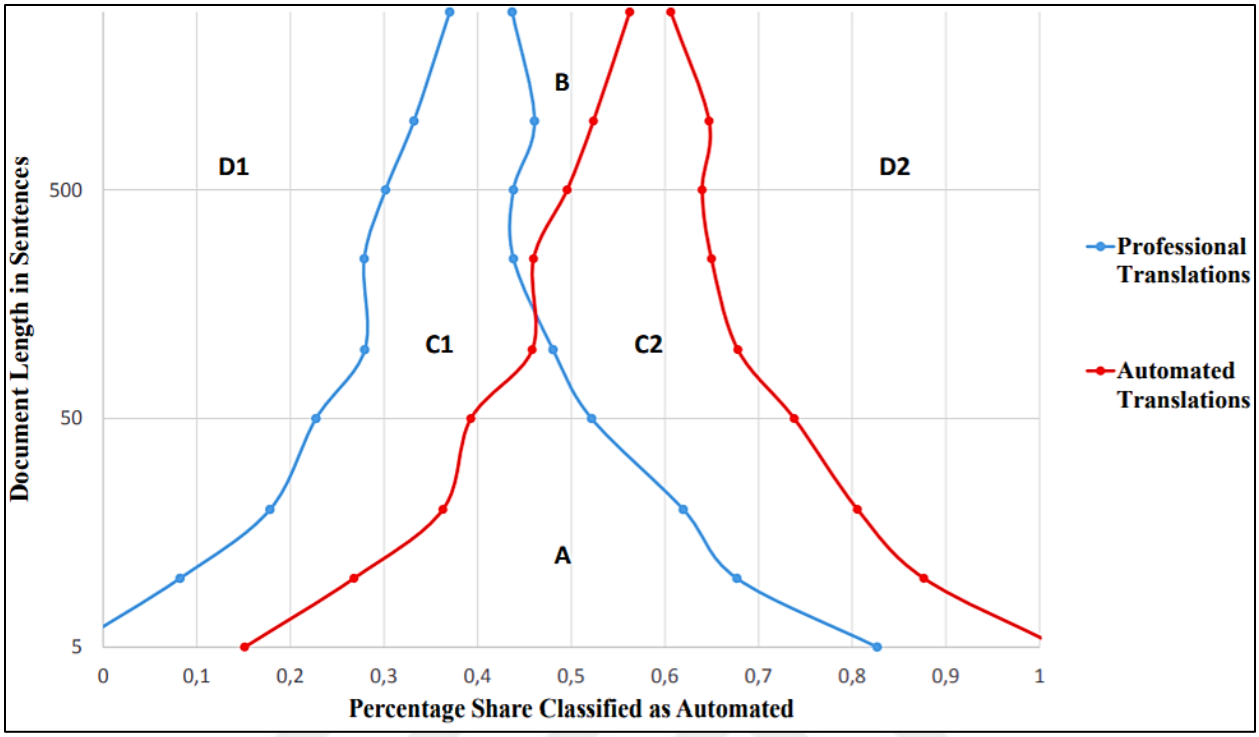

Figure 4.3. The description of electronic learning repository in terms of student learning and proprietary documents using SVM for professional translation and automated translation for 50-samples.

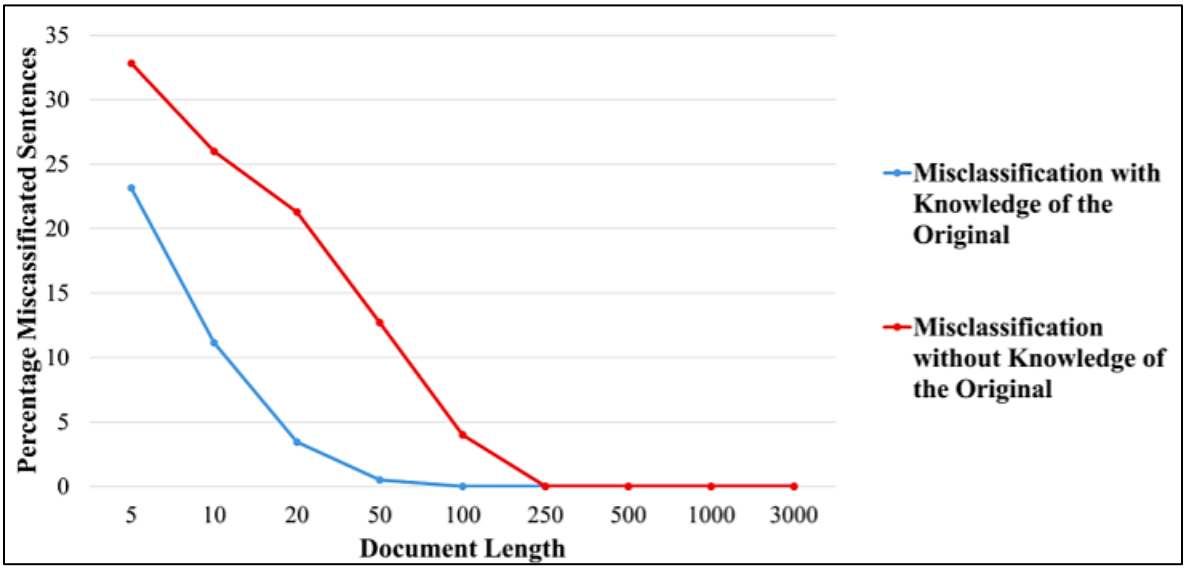

Figure 4.4. Reliance of SVM model execution on the quantity of learning records in the communicated light stack. The misclassification with and without knowledge and learning recording is the quantity of records in the SVM model information.

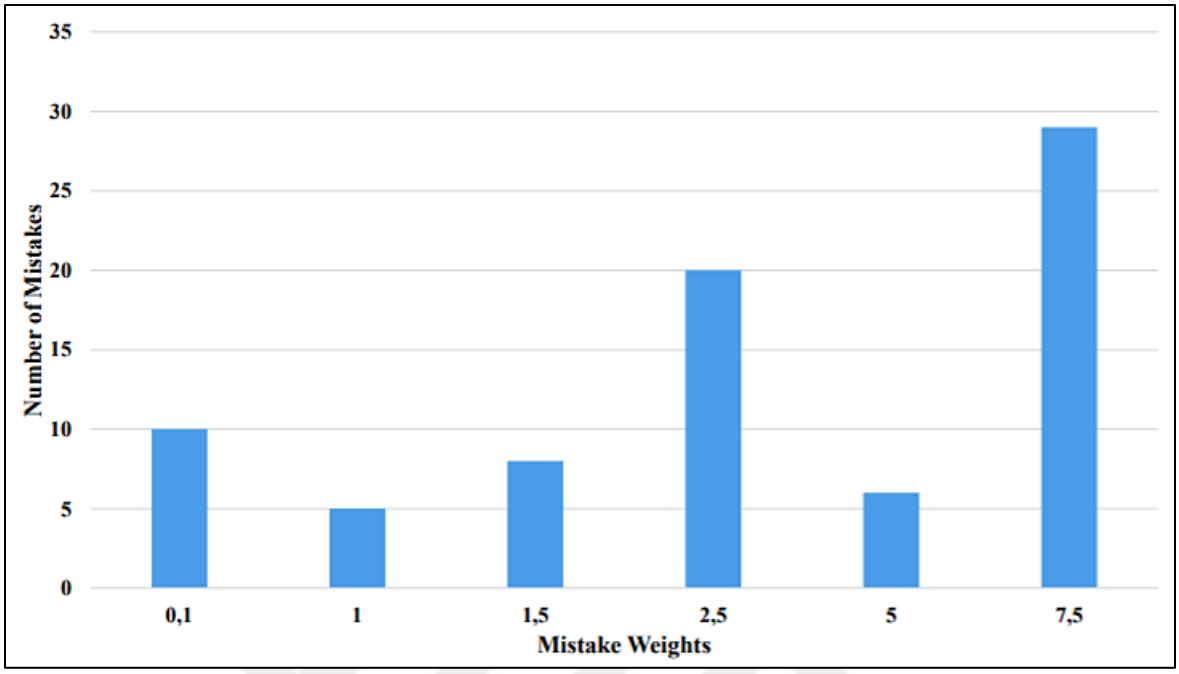

Figure 4.5. Breakdown of learning scatter plots in terms of learning, prediction, and simulation of offered mistake weights of electronic learning.

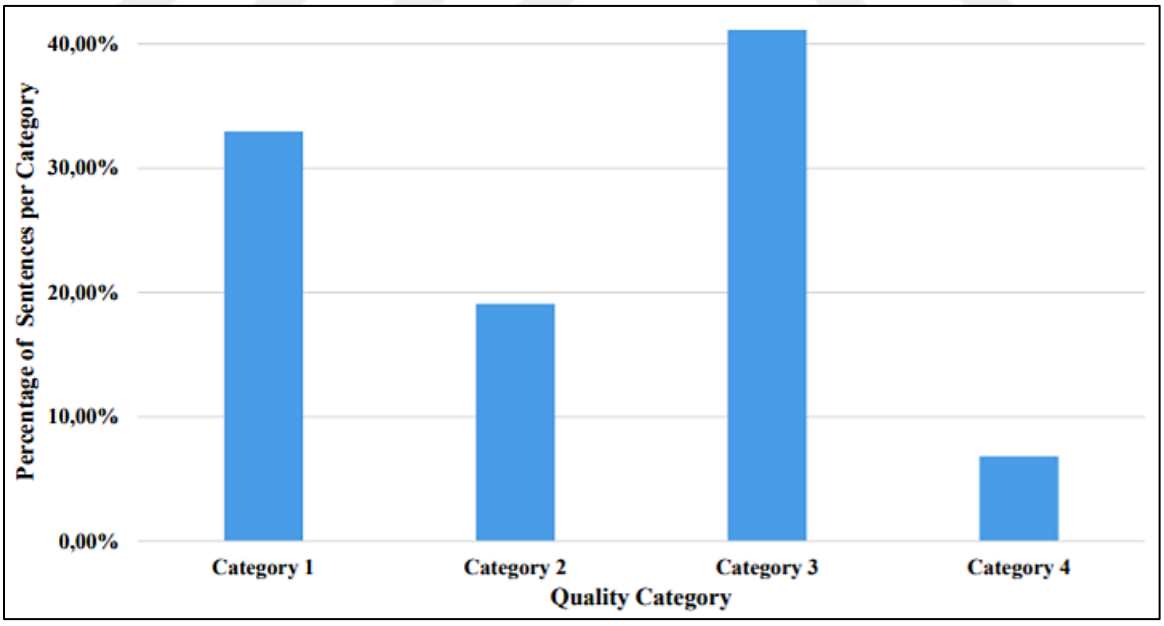

Figure 4.6. Breakdown of learning scatter plots in terms of learning, prediction, and simulation of offered quality category of electronic learning.

An objective of this study was to track down a way to deal with impact better advanced modernization at the establishment through correspondence with the information that staff are

firmly affected inside their discipline. Since resources are assessed, upheld, and tenured at the division level, messages customized at the office level ought to be more effective than if from the school or college level. To see how units, communicate with one another as for information the board, the review asked how specialists in the three offices deal with their own wellbeing information. Individual analysts are the unit of investigation. The methodology is to utilize the AI and the Activity hypothesis to address a develop of the interrelated cycles that depict the computerized modernization process. Wellbeing record modernization and the executives is at the center idea of change. In this work, computerized modernization is being performed for the three significant advanced libraries of clinics of Iraq whose degree rises above the innovation that we use to explore it. Our advanced modernization depends on choices by the makers of the antiquities for three distinct computerized libraries, the framework which oversee it, the methods which keep up with the frameworks and that makes strategy and financing for it. Analysts are makers of the data and, as expressed prior, have the best liability to build up the worth of computerized curios. Since the computerized age will depend on the way we modernize our information, modernization rehearses should develop to fulfill cultural requirements. Given the transient idea of the advanced world, our choices of what information to save has essentially changed. DOI is a full-grown hypothesis, components which measured involving computerized framework investigation for record change.

The ground truth dataset can be complemented by existing property parcel information that could be indistinguishable based on the recorder alone. Furthermore, a single field record edge smoothening can potentially show several subfields due to unreported land use changes within the growing season. Given these constraints, even a very powerful automated record processing algorithm can only become as good as the ground truth data but will never be in perfect alignment with reality. Although the model can generalize within certain limits (local generalization), its transferability is mainly limited by the variability of the training data. However, filter field are often directly adjacent to each other and have touching boundaries.

5. DISCUSSION

5.1 STUDY ANALYSIS

Electronic record modernization and management is at the core concept of transformation. In this work, digital modernization is being performed for the three major digital libraries of universities whose scope transcends the technology that we use to navigate it. Our advanced modernization depends on choices by the makers of the curios for three distinct computerized libraries, the framework which oversee it, the procedures which keep up with the frameworks and that makes strategy and subsidizing for it. Specialists are makers of the data and, as expressed prior, have the best liability to set up the worth of computerized antiques. Since the advanced age will depend on the way we modernize our information, modernization rehearses should advance to fulfill cultural requirements. Given the transient idea of the advanced world, our choices of what information to save has on a very basic level changed. DOI is an experienced hypothesis, components which measured involving computerized framework investigation for record change. State of the art thesis include many record-based identification and tracking approaches. Representation with modeling, specifying key features for detection, contours tracking, or by using classification techniques such as neural network and binary tree classification. Although machine learning algorithms and classifiers needs robust training with lots of data only then they can segment record from electronic learning. This approach needs lots of processing and hence computationally expensive. The more traditional method where we use record form depth information and try to find record from those electronic learning combined; is an ideal approach for this task. The AI is one of several international (ISO) standards that attempt to resolve problems in an increasingly connected world. Focusing on the average best validation error, two statistics seem to correlate with its absolute improvement. On one record, the improvement seems to shrink with the number of classes and thus the number of original samples in the training set. As the number of selected classes is increased from seven to ten, the difference becomes smaller and even negative. However, even though relatively small, the classification accuracy is higher when the data augmentation is used for twenty classes as well as the whole dataset. On the other record, the data augmentation becomes more effective for subsets with larger maximum sequence length. While there was a similar amount of original training samples in the three five-class subsets, the maximum sequence length strongly varied.

5.2 COMPARISON WITH EXISTING PROCEDURES

The examination has been planned exclusively for the academic clinics change plan and movement bunches as for advanced modernization action. Clinics record movement hypothesis gives a system that incorporates rules, assets, instruments, and culture for the modernization of academic care records. Both can clarify the presentation and dispersion of computerized modernization rehearses all through the academic clinics by change. The overall examination between the significant documents of storehouses with all diaries for the endeavors of academic care records modernization carefully. Computerized innovation has been accessible for over 50 years. The inescapable utilization of computerized innovation in business is around a quarter century old - since the coming of the World Wide Web. It is just in the previous ten years that establishments have started to formalize how our insight for people in the future will be modernized as performed. Each of the previously mentioned endeavors is important for an iterative cycle. Analysts foster computerized modernization rehearses for their exploration with imperatives forced by the medium, help from models and peers, and with heading from conceding organizations. They can apply these practices to their own lives and give input to the interaction in light of these encounters, rolling out little improvements to the framework to meet their requirements. In this way, the computerized climate is a making of human movement that is both specialized and social. Arrangements require worked on comprehension of the correspondence that crosses emergency clinics and that perceive individual necessities and existing record modernization frameworks.

Table 5.1. The compassion for the modernization of electronic learning in digital form among existing digital libraries.

ARTICLE	TECHNIQUE	DIGITAL LIBRARIES
[51]	Trustworthy Digital Object (TDO)	National Digital Information Infrastructure Modernization Plan (NDIIPP)
[52]	Byte Replication and Encapsulation	Information Communication Technology (ICT)
Proposed	**Support Vector Machine (SVM)**	**E-Learning Student Reactions**

The endeavors at this beginning phase of the change in perspective will impact people in the future's view of what our identity was, how was treated, why. Today, interceded interchanges and information have united onto advanced arrangements that have been embraced by pretty much every public in the world. Albeit the ramifications of the advanced change have been examined according to numerous points of view, its effect may not be completely perceived for a long time into the future. We proposed another advanced model north of four years of clinics academic care records from 2015 to 2022, the speeding up pace of wellbeing information development has expanded both the quantity of exceptional open doors for revelation and the danger of accidentally eliminating precious data sources from the file of aggregate human information with a keystroke as clarified the cycle. While the innovation to store information (equipment and programming) has improved at an expanding speed, individual and hierarchical practices have been a lot slower to adjust to the new climate. Information stockpiling has become more straightforward as the cost of capacity gadgets has plunged while information modernization has become more earnestly due to the undertaking's greatness and inconspicuous, dynamic nature.

6. CONCLUSION

6.1 CONCLUSION

In this research work, e-learning modernization is being performed for transforming the traditional learning system using AI based approach, the scope transcends the technology that we use to navigate it between the gap of modernization from paper-based to digital format. This gap leads to the modernization of the learning data. These gaps can create a nearly impossible task of recovering paper-based data but using this smart system, the electronic learning can be recovered from any digital repository where it is stored. This is the time that many university regulations require documents be stored for reporting purposes in digital format as many other prospering countries have upgraded their system using SVM. In results, we achieved good modernization of most of the electronic learning from 2015 to 2022, the goal is to modernize which most of the electronic learning it belongs to digital format. The distribution of electronic learning modernization for major archives in term of paper based and digitally modernized electronic learning from year 2015 to 2022. The modernization of electronic learning was recorded very low in 2015 as much of the record archival were paper based in all major repositories of the universities. However, year-by-year the smart system tends modernize the electronic learning in digital format from old paper-based format and till 2022 large amount of electronic learning are being converted to the digital format with a whopping accuracy of 98.68% for all the electronic learning where the system was trained on 80% of data and tested on rest of the 20% of data. In this work, digital modernization is being performed for the three major digital libraries of universities whose scope transcends the technology that we use to navigate it. Our advanced modernization depends on choices by the makers of the antiques for three distinct computerized libraries, the framework which oversee it, the strategies which keep up with the frameworks and that makes strategy and financing for it. Specialists are makers of the data and, as expressed prior, have the best liability to set up the worth of advanced curios. Since the computerized age will depend on the way we modernize our information, modernization rehearses should advance to fulfill cultural necessities.

6.2 FUTURE WORK

The AI is one of several international (ISO) standards that attempt to resolve problems in an increasingly connected world. Focusing on the average best validation error, two statistics seem to correlate with its absolute improvement.

i. In future, the improvement will shrink with the number of classes and thus the number of original samples in the training set. As the number of selected classes is increased from seven to ten, the difference becomes smaller and even negative.

ii. However, even though relatively small, the classification accuracy is higher when the data augmentation is used for twenty classes as well as the whole dataset.

iii. In future, the research will aim to perform data augmentation becomes more effective for subsets with larger maximum sequence length. While there was a similar amount of original training samples in the three five-class subsets, the maximum sequence length strongly varied.

iv. The largest absolute improvement was achieved for the classes where the maximum sequence length was the highest and it would be determined in future.

v. In future, the maximum length was equal in the experiments with seven, eight, nine and ten classes, where a shrinking improvement was observable with increasing training set size, the maximum sequence lengths are significantly larger when the experiments are repeated on the classes. In these cases, the data augmentation has positive effects again.

vi. As the maximum number of frames gets clipped to smaller numbers for the created sequences, the synthetic samples become less helpful for improving the classification accuracy on the whole dataset.

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