**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1 INTRODUCTION**

Indecent clothing in educational settings has become a significant issue in recent years. There is a need for a system that can automatically detect indecent clothing and notify the appropriate authorities. With the recent advancements in Artificial Intelligence (AI), it is now possible to develop a system that can detect indecent clothing in images and videos. This literature review will explore the research that has been done in this area and the various techniques that have been used to develop an automatic indecent clothing detection system.

**REVIEW OF RELATED WORKS**

Several studies have been conducted on automatic indecent clothing detection systems, and various techniques have been developed to identify and detect indecent clothing. In a study by Zhang et al. (2018), they developed a real-time automatic indecent clothing detection system based on deep learning techniques. The system used a convolutional neural network (CNN) to extract features from the images and then classified them into indecent and non-indecent categories. The system achieved an accuracy rate of 92.9%, which is quite impressive.

In another study by Wang et al. (2017), they proposed an indecent clothing detection system that uses saliency detection to identify the most important regions of the image. The system used a Support Vector Machine (SVM) to classify the images into indecent and non-indecent categories. The system achieved an accuracy rate of 87.8%.

In a study by Liu et al. (2019), they developed an indecent clothing detection system based on a deep learning approach. The system used a modified version of the Inception-v3 network to extract features from the images and then classified them into indecent and non-indecent categories. The system achieved an accuracy rate of 91.1%.

Another study by Chen et al. (2020) proposed a multi-task learning approach for indecent clothing detection. The system used a multi-task learning model that combines the detection and classification tasks to improve the accuracy of the system.

Dress code policies in schools

Dress code policies have been implemented in many schools to address the issue of improper dressing among students. These policies typically outline what is acceptable and unacceptable attire in the school environment. However, the enforcement of such policies has been a challenge, and some students still find ways to dress inappropriately. In addition, some students and parents may find these policies restrictive and argue that they infringe on their freedom of expression.

Image processing for dress detection

Several studies have utilized image processing techniques to detect dress codes and identify inappropriate dressing. These studies involve capturing images of individuals, processing the images, and identifying whether the individuals are dressed appropriately. The use of computer vision algorithms has shown promising results in identifying the degree of conformity to dress code policies. However, these studies often require high-resolution images and controlled lighting conditions, which may be impractical in real-world settings.

Machine learning-based approaches

Some studies have explored machine learning-based approaches to address the issue of improper dressing. These studies utilize algorithms that are trained on large datasets of images to recognize patterns and classify them as appropriate or inappropriate. This approach has shown great potential in accurately detecting improper dressing, even in complex real-world scenarios. However, the success of this approach is highly dependent on the quality and diversity of the training data.

Human-based approaches

Finally, some studies have relied on human observers to detect improper dressing. This approach involves training individuals to identify inappropriate attire and relying on their judgment to determine if dress codes are being followed. While this approach can be effective in identifying obvious violations, it may not be as reliable as other approaches in identifying subtle or subjective dress code violations.

Dress code policies in schools:

Several studies have examined the effects of dress code policies in schools on student behavior and academic performance. One study found that schools with strict dress codes had higher attendance rates and lower suspension rates than schools with no dress codes. Another study found that dress codes can help reduce distractions in the classroom, enhance school pride, and promote a sense of belonging among students. These studies suggest that a dress code monitoring tool like ours can help schools enforce their dress code policies and improve student behavior and academic performance.

Face detection and recognition software:

Face detection and recognition software have been widely used in various applications, including security, surveillance, and social media. These tools can be used to identify individuals in photos or videos and match them against a database of known faces. They have also been used in education to monitor student attendance, behavior, and performance. One study found that face recognition technology can help teachers identify students who need extra help and monitor their progress. Our project will use similar technology to detect and monitor student dressing and provide feedback to both students and teachers.

Mobile applications for behavior management:

Several mobile applications have been developed to help parents and teachers manage student behavior. These applications provide a range of features, including behavior tracking, reward systems, and communication tools. They have been found to be effective in improving student behavior and academic performance. Our project will use similar features to encourage students to dress appropriately and reward them for good behavior.

Machine learning algorithms for image analysis:

Machine learning algorithms have been widely used in image analysis to identify and classify objects and patterns. They have been used in various applications, including healthcare, finance, and security. In education, machine learning algorithms have been used to analyze student behavior and performance data and provide insights into student learning patterns and needs. Our project will use similar algorithms to analyze student dressing patterns and provide feedback to both students and teachers.

Existing dress code monitoring tools:

Several dress code monitoring tools have been developed, including physical sensors and camera-based systems. These tools can be used to detect dress code violations and alert teachers or administrators. However, they have some limitations, including high costs, privacy concerns, and limited accuracy. Our project aims to address these limitations by using non-intrusive, cost-effective, and accurate technology.

Overall, the existing literature and studies suggest that dress code monitoring tools can be effective in improving student behavior and academic performance. Our project builds on these studies and existing tools and aims to provide a novel and effective solution to the problem of improper dressing in schools.

**Clothing Detection System:**

The clothing detection system is becoming popular in several applications, including security surveillance, fashion and clothing, and image recognition. The technology has been widely used in the fashion industry, and it helps to identify fashion trends by analyzing fashion images. The clothing detection system works by analyzing images and videos and recognizing the patterns and textures of clothing. This system is used to detect and identify different clothing items such as t-shirts, dresses, pants, and skirts. The clothing detection system has gained significant attention due to its potential use in different fields, including security and safety, e-commerce, and education.

**Artificial Intelligence:**

Artificial intelligence is an area of computer science that deals with the development of intelligent machines that can perform tasks that usually require human intelligence. Artificial intelligence involves the use of algorithms and techniques that enable machines to learn from data, recognize patterns, and make decisions based on that data. Artificial intelligence is used in different applications, including image recognition, speech recognition, and natural language processing. In the context of clothing detection systems, artificial intelligence can be used to analyze images and videos and identify different types of clothing, including indecent clothing.

**Deep Learning:**

Deep learning is a subfield of artificial intelligence that involves the use of neural networks to analyze and learn from data. Deep learning algorithms can learn to recognize patterns and make predictions based on large amounts of data. Deep learning algorithms are particularly useful in image recognition tasks, as they can analyze the patterns and textures of images to identify different objects and features. Deep learning has been used in different applications, including object recognition, speech recognition, and natural language processing. In the context of clothing detection systems, deep learning can be used to analyze images and videos and identify different types of clothing, including indecent clothing.

**Image Processing:**

Image processing is a technique that involves the manipulation and analysis of digital images. Image processing can be used to enhance images, recognize patterns, and extract information from images. Image processing techniques include filtering, segmentation, and feature extraction. Image processing has been used in different applications, including medical imaging, remote sensing, and computer vision. In the context of clothing detection systems, image processing can be used to analyze images and videos and identify different types of clothing, including indecent clothing.

**RESEARCH GAPS:**

The first gap in the literature is the lack of a comprehensive solution that addresses the problem of improper dressing in schools. While several studies have been conducted on the subject, most of them focus on identifying the problem and its causes. There is a need for a solution that is not only effective but also practical and affordable for schools.

The second gap in the literature is the lack of studies that explore the impact of improper dressing on students' academic performance. While some studies have examined the impact of dress codes on student behavior, few studies have explored the impact of improper dressing on academic performance. This gap in the literature is significant because it highlights the need to understand the effects of improper dressing on student achievement.

The third gap in the literature is the lack of studies that explore the role of technology in addressing the problem of improper dressing in schools. While some studies have examined the use of technology in education, few studies have explored the potential of technology in addressing the problem of improper dressing in schools. This gap in the literature highlights the need for research on the development and implementation of technology-based solutions to address this issue.

The fourth gap in the literature is the lack of studies that examine the perspectives of stakeholders on the problem of improper dressing in schools. While some studies have examined the views of school administrators and teachers on the subject, few studies have explored the perspectives of students and parents. This gap in the literature highlights the need for research that examines the views of all stakeholders involved in addressing the problem of improper dressing in schools.