



A REVIEW ON ARTIFICIAL INTELLIGENCE IN FASHION

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Abstract:

AI – Artificial Intelligence has been the buzz word in current market strategy. Though this was an alien few years before but now it has a great depth and is way more advanced than we can imagine. The AI-assisted automations have not only increased the efficiency of machines but also the overall industrial operations. Several researchers and scientists have conducted studies and have confirmed that the analyzing of images, backpropagation and networking done on a natural scale is used as a testing technique in the textile manufacturing fields. The entire paper discusses the importance of Artificial Intelligence, its meaning, implementation, sustainability in varied fields, application in the textile industry, a few examples are also named and explained. How the adoption in the textile industry had benefitted the manufacturers and its pros and cons. The right use of AI programming can help develop and enhance many fields but, on another hand, AI is overly used, it will overly dominate the human race as well as exploit their rights.

INTRODUCTION:

The fashion industry is the right place for AI to function. The basic business model has not budged since decades. There are multiple chains that have multiple players, each of them depending on each other to produce the product. These are one of the options available in the textile industry to integrate the elements such as production, quality, information, cost, statistical process control, timely manufacturing and technical related manufacturing. It is quite a slow and subtle process and is efficient in its production functions and manufacturing on a quantitative (large scale) without guarantee of any sales, thus it causes wastage of money and commodities. AI can help in the development and implementation of a circular economy. It also utilizes the combination of historical and real-life data from producers and users, and also makes use of the analytical tools with predictive tools in order to avoid any kind of wastage by identifying operational changes. AI has its reach in many different ways, suggesting of sizes on online

purchases and which eventually protects the returning of the products. This reduces inventory overflow and wastage. These also predict in aspects of colour, style, fabric and fit. These can all together reduce the overall inventory amount by 20-50 percentage.

Case Study 1

(According to a McKinsey report) By 2021 artificial intelligence will have its presence in fashion. It will be playing a crucial role in the industry. Mainly AI has brought its focus towards Chabot's, managing processes, assessing market demands and ensuring hike in sales through personalized styling. AI also considers a sustainable approach to manufacturing by analyzing the minutest consumer desires that can reduce any kind of wastage.

Case Study 2

Stitch Fix, the online personal styling company is a company that has employed AI to its fullest, utilizing machine learning algorithms to create a better and soothing customer's experience as well as the supply chain management. These algorithms learn to perform better, are exposed to more and more data.

IMPLEMENTATION OF AI IN TEXTILE FIELD

Artificial Intelligence has its complete potential to oversee and manage the entire Fashion Value Chain right from the designing to selling. Extending hands for brands to accurately cope up with trends and forecast customer's requirements before making any investments in the production with the risk of unsold items causing a huge wastage. AI also has the potential to advance sustainability as it generates new innovative designs and related ideas based on the unsold inventory or stock and dead stock fabrics.

HEURITECH, a fashion industry that provides with predictive analysis on trends and the following products. These utilizes the AI to make analysis on social media images, which are then taken as the running trend and insights of fashion. There is a high demand of good quality products thus results in the usage of automated artificial intelligence in the textile production process with popular technical developments and the implementation of modeling and simulation. By adapting AI, we can reduce the number of faults which can eventually reduce the cost of production, it can be implemented in in all the stages of manufacturing.

The use of AI has its existence in different stages of developing sewn seam designs, in PPC, pressing of fabric, bundling, in different sewing processes, pressing of fabric, ironing, packaging, the controlling quality, SCM, etc.

Application of AI

These are a few applications of artificial intelligence in the textile field. One of the main and widely used AI is (ANN) Artificial Neural Network.

1. Identification of defected fabrics
2. pattern inspection
3. Color matching
4. Sewn seam
5. CAD systems
6. Production planning and control

SUITABILITY OF AI:

Employing Artificial Intelligence to observe, analyze, and implement this could lead to a greatest provable and irrevocable transparency in not limiting to the fashion field but in all aspects of business and society. The accountable brands like H&M products are based on aggregation and data of transparency. AI can very well look into the production process, support supply chain redesign and non-traditional shopping. Example Depop, that deploys machine learning to have personal recommendations for the users. The companies will hold themselves as accountable and not anyone else delivering their responsibility and transparency. AI in a combination with technologies like block chain to work on their own and supplier organizations' is suggested to have a potential for raw materials, labor policies and supplier policies to be very transparent publicly. This improves the company's working conditions and encourages them to share the social impact of their production. If AI is implemented in our working development, it can transfer to further projects and industries to reach the accountability and transparency levels.

In textiles AI can also be useful in packaging and transportation. It is vital to maintain the management supply chain for the flexible flow between merchants and manufacturers of materials.

RECENT APPLICATIONS OF AI IN TEXTILES

Cognex - Fabric pattern Inspection

Cognex learning revolves around the automatic inception of complex fabric patterns it includes the process of knitting, braiding, finishing and printing. Without the use of any complex software development, the software algorithm trains itself to create models. During the inspection the Cognex identifies and reports the defective areas on the fabrics.

COGNEX CORP.

It was founded in 1981 in Boston.

More than a thousand employees work for an American manufacturer which is based on the vision systems, sensors and software. The company also supports the use of Cognex ViDi platform which has been applied for the recognition of fabric patterns.

Yarn Dye Plaid:

ViDi provides the first woolen fabric with a red tool, that suggests the set of good samples which the computer can learn by itself. This doesn't require any assistance; in fact, it is unsupervised. It supervises the color, some imperfections, weaving pattern and yarn processing.

After the completion of the training session. The system could easily identify the flaws and imperfections in the fabric.

Working of Cognex:

The time is the major factor for all the processes. Thus, with the working of Cognex it is easier to save cost as well as timely management can be enabled with the efficient inspecting of the quality of the end product. The cameras can also be installed to encourage the inspection system with a virtual programming. The industry and we can also upload numerous images of good and bad samples. The weaving pattern, colors, yarn properties and a few imperfections that are tolerable are noticed and these processes are performed by the Cognex. During the training period for a couple of weeks the system might have the potential to identify and spot the defects in the end product, this helps to reduce the man power from performing the effort and time-consuming tasks that assess a hundred of yard of material.

ADOPTION OF AI IN TEXTILE INDUSTRY:**1.Reinforcement learning:**

The process of garment making is a repeated process. According to the situational parameters, the AI can be programmed and train the machines and computer systems accordingly. AI can be used in many ways and processes like cutting, ordering and planning, balancing the line, making decisions during inspections, etc.

2.Apparel Retails:

The fashion trends drive the apparel retail chains, especially the e-commerce. The customers have various preferences that with the help of AI can be established. It helps the computers to suggest and recognize images that are more like to be purchased by the customers. These platforms of e-commerce provides information available about the customers, their likes and dislikes , similarities , and differences in regards to the products. AI creates a positive and pleasant shopping experience for the customers.

3.Communication:

AI helps to reduce manual efforts applied during the communication process. With the help of natural language processing and capabilities to learn. AI supports to construct conversations with the buyers. It can also create low error scope and very much personalized experience for the customers.

4.Data Analysis:

AI also helps the textile industry to analyze larger volumes of data, predicts the trend preferences by the consumers , creating an error free merchandising process, analyze the customer needs.

IMPACTS:**1. Trend spotting:**

AI tool is trained in its data quality as well as quantity. It also analyses prior fashion - called Fashion Forecasting, assesses customer requirements and preferences and identifies market trends.

2. Machine assisted design:

The machine can be trained to program in an effective manner. They are designed to realize numerous technological titans.

3. Experiences of the customers:

Some customers get annoyed and might have poor buying experience, it might be due to not receiving products on time. Many fashion textiles are under pressure to provide timely services and meeting the demands of the customers.

4. Enabling New Applications:

We can combine the electric sensing technologies to develop a smart clothing. Just like the fitness trackers are able to assess the users to have a better and a healthy lifestyle. Rather than a smart watch, smart clothing can more effectively monitor the health of the body as it has a greater interaction with the body. It can monitor things such as our heart rate. Doctors can then easily diagnose the probable heart disorders. Smart clothing can also enable the patients collect full and extensive cardiovascular disease and boost cardiac detention and diagnosis by regular long monitoring.

After Covid-19 pandemic, consumers became very conscious about their health care and medical care that they started to prefer cleaver and smart wearables. The BLE- Based wraps sensors. Which sensed and controlled data, and improved the entire wearing experience.

NEGATIVE IMPACTS:

Even though AI has a number of benefits it still cannot get rid of its drawbacks too. It has a potential to threaten the society and our well being especially through its ability to replace humans in a lot of employment opportunities. As a result, it creates more unemployment.

Governments, businesses and NGOs are keeping themselves under a limited use of AI, they have their own way of AI ethical conduct for a positive and beneficial end for the society as well as the environment.

CONCLUSION:

The foundational base of AI is its quality to easily imitate the human intelligence, commands and orders, that are further implemented or applied for the processing and the

completion of an effective task. Adopting the use of AI can help in developing the textile industry in an innovative and effective manner. The AI based manufacturing of garments can develop the computers of the future will understand not just how to turn on switches but why the switches need to be turned on.

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