Artificial Intelligence in Textile Industry

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Abstract
In this era of information technology, there are a lot of ongoing discoveries and developments. Artificial Intelligence research is one of the most exciting fields in technology. Artificial Intelligence has revolutionized many fields. It is shaping the future of humanity across and has swept across various industries. One area artificial intelligence is seeing growth in is the textile industry. The automation with applications of artificial intelligence in textile production is becoming much popular due to the technical developments and the use of modeling and simulation.

Keywords - Artificial Intelligence, technological, advancements, fabrication, simulation

Introduction
With the technological advancements being developed by artificial intelligence ("AI"), a branch of computer science wherein computers and other machines simulate human intelligence processes, AI will provide an avenue for furthering innovation and emerging technologies. A few years ago, the term "Artificial Intelligence" or AI was restrained mainly for science fiction movies. Today, AI is all around us. One area artificial intelligence is expanding in is the textile industry. The textile industry is one of the oldest and most important industries in the world. It is also an industry that is constantly developing and changing. In recent years, one of the transformations in the textile industry is the introduction of artificial intelligence (AI).

Textile industries are becoming more automated to cater the increasing demand of consumers. Artificial intelligence (AI) is gaining impetus over the last two decades, in the textile industry. The rise of new technologies such as Artificial Intelligence (AI) and the Internet of Things (IoT) has transformed the once labor-intensive textile industry.

Review of Literature
Rajkishore Nayak, RajivPadhye (1998) found that to cater the demands of high competitiveness the labor-intensive processes should be converted into automated processes accomplished using computers, models, digital components, and artificial intelligence (AI). Sébastien Thomassey & Xianyi Zeng (1998) The potential applications of artificial intelligence in fashion industry cover a wide scope from design support systems to fashion recommendation systems through sensory evaluation, intelligent tracking systems, textile quality control, fashion forecasting, decision making in supply chain management or social networks and fashion e-marketing. Meilin Huo, Jingqi Tang, Chul Soo Kim (2019) reported With the development and perfection of artificial intelligence technology, the research field of artificial intelligence penetration is more and more extensive.

Objectives of Study
1. To study the concept of artificial intelligence in textile industry.
2. To study the areas of application of artificial intelligence in textile industry.

Research Methodology
The paper is based on secondary data and the information is retrieved from the internet via journals, research paper and expert opinions on the same subject matter.

Concept of Artificial Intelligence
The high demand for the quality increased leading to the application of automated artificial intelligence in textile industries recent years. As a result, over the last decade, the use of AI is rapidly growing in textile industries for various applications. Robotics is no longer a restricted field, it is a

universal subject Technological developments in recent years, in the fields of Robotics and AI have allowed the textile industry to progressively adopt automation in the textile manufacturing processes. The implementation of robotics in the industrial world as well as the textile industry has resulted in boon. It is already the main driver of emerging technologies like big data, robotics and IoT, and it will continue to act as a technological innovator for the foreseeable future. Computerized machinery is now found in most textile factories, and these machines are far more efficient at creating specific designs on a massive volume than human workers.

The automation with applications of artificial intelligence in textile manufacturing is becoming much popular due to the technical developments and the use of modeling and simulation. AI is finding a home with textile manufacturers, helping with visual inspection jobs like color matching and pattern making. And some companies are using artificial intelligence to assist with quality control, supply chain management, and an overall improved customer experience.

Application of robotics in textile industry is directed at minimizing human efforts in labor-intensive processes. The automation of various instruments by the application of artificial intelligence in spreading, cutting, **sewing**, and material handling can reduce the production cost and minimize faults in the overall textile production. Adoptions of AI reduce the number of faults and keep the production cost low. It is applied in all the stages (preproduction, production, and postproduction) of textile manufacturing.

Artificial Intelligence leaves every part of its impressions, whether fabrication of textiles, quality control, just-in-time production, data collecting or computer integrated manufacture. Model cutting and design making is an essential operation in the textile business, where materials are cut to the prescribed design, and various patterns are formed on the cloth. CAD is an AI sub-set that enables computerized patterns to be produced in which designers can build and digitize the basic structure of the patterns. CAD is used to cut patterns, where 3D pictures of cloth and concepts are provided, which makes it easier to display. Other typically integrated AI applications include

fault detection, pattern checking, and color matching for textile production.

In the textile industry, artificial intelligence (AI) is being used to create designs, select colors and patterns, and even 3D-print fabric. AI is also being used to create textile fibers and fabrics that are stronger, more durable, and have unique properties. In the future, AI will continue to be used to create new and innovative textile products. The major raw material for the clothing industry is fabric. The quality of the fabric influences the quality of the garment, productivity, and the ease with which garments can be manufactured. The fabrics are selected based on the type of garment and their end-use applications.

AI is increasingly used to different stages of a sewn seam, design development, in PPC, **fabric spreading**, cutting, bundling, in various sewing operations, pressing, ironing, packaging, quality control, SCM, etc. Some of the important applications of artificial intelligence in textile industry made it possible to offer a better experience for smart clothing or "Smart Clothes" which use IoT and electronic sensors. Smart clothing can provide a more pleasant experience and a health-oriented experience by utilizing these technologies. Smart clothes combined with electric sensing technologies can accomplish the same, like how fitness trackers can enable their users to live a better and more attentive lifestyle.

AI is already having a major impact on the textile industry and is only going to become more important in the future. There are many ways that AI is being used in the textile industry, including:

1. **Automated design:** AI can be used to create new designs for textile products automatically. This can be done by either creating new designs from scratch or by modifying existing designs.
2. **Manufacturing:** AI can be used to help automate the manufacturing process of textile products. This includes tasks such as fabric cutting, sewing, and printing.
3. **Quality control:** AI can be used to help improve the quality control of textile products. This includes identifying defects in products and making sure that they meet customer specifications.
4. **Sales and marketing:** AI can be used to help with sales and marketing of textile products. This includes tasks such as

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identifying potential customers and helping to promote products to them.

Conclusion

In this modern era, AI is being used in many areas to solve various problems with intelligence like human beings. Artificial intelligence is already proving to be extremely useful in the textile industry, and it is only going to become more so in the future AI in the textile industry brings cutting-edge revolution and disruption that's never been seen before. AI can help businesses to keep up with the latest trends and developments in the textile industry, ensuring that they remain at the forefront of this rapidly changing sector. The application of artificial intelligence in textile industry has a bright future like other areas of application.

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